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Port modernization in Chile

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Explanatory notes

A point (.) is used to set off decimal places.

A dash (-) between numbers expressing years—for example, 1985-1986—means that the period so indicated includes both years.

The word "tons" refers to metric tons, "US$" refers to dollars of the United States of America, and "pesos" refers to Chilean pesos.

The following conventions have been used in tables:

three dots (· · ·) indicate that data are lacking or are not shown separately;
a dash (-) indicates that the amount is null or negligible.

INTRODUCTION

The meeting of the *Ad hoc* Group of Experts on the International Common-Carrier Transportation Industry and the Competitiveness of the Foreign Trade of the Countries of Latin America and the Caribbean, which was held at the headquarters of the Economic Commission for Latin America and the Caribbean (ECLAC) in Santiago, Chile, from 18 to 21 April 1989, recognized that in order to achieve greater integration of the physical distribution chain of external trade and improve the competitiveness of the economies of the countries of the region, top priority would have to be given to making the ports efficient. With a view to improving international co-operation in that area, the *Ad hoc* Group of Experts recommended that ECLAC carry out studies on the bottlenecks in the ports of the region and assess the impact of such bottlenecks on the economies in general and on external trade in particular. To initiate such analyses, ECLAC was requested to prepare a document on Chile's experience with respect to the reforms implemented in its port system over the past few years.

ECLAC is also carrying out a series of case studies under the project entitled *Technical co-operation among the countries of Latin America concerning the transport, distribution, marketing and competitiveness of their exports*; the project, whose objectives are complementary to those of the *Ad hoc* Group of Experts, is being financed by a contribution from the Government of the Netherlands.

This report, which has been prepared pursuant to the recommendation of the *Ad hoc* Group of Experts, describes the changes that occurred in the Chilean port system from 1973 onwards.

The report is in four chapters. The first contains a summary of the most important aspects of the process of change, and in it attention is drawn to the most valuable lessons to be learned from that process. In the second chapter the changes made in the port system are described, with special emphasis on changes in the organization of work at the ports and on the main institutions involved in running the sector. In the third chapter consideration is given to background information on the evolution of the productivity, costs and capacity of the port system, the reference years being those which are important in the history of the structure of port operations and from the viewpoint of the information available. The fourth chapter analyzes the mechanics of the process of restructuring and explains the order in which the changes were implemented. The chapter focuses on strategy and on some of the problems that came up during restructuring.

This report has been prepared on the basis of work done by Carlos Hurtado R-T. and Ricardo Ramos R., consultants from Ingenieros y Economistas Consultores Limitada (INECON), who used a number of reference sources ranging from documents on the port sector prepared by various institutions over the years to publications and press articles and interviews with some of the people who had leading roles in the process of change.

Chapter I

SCOPE OF AND LESSONS OFFERED BY THE PROCESS OF MODERNIZATION OF THE PORT SYSTEM IN CHILE

As an introduction to this study, it may be useful to briefly describe the nature and scope of the changes that have occurred in Chilean ports since 1973. The reasons behind those changes will be examined, together with the developments which made them possible, the difficulties faced in carrying them out, and the lessons they offer concerning the modernization of ports. Chile's experience in this connection, which is unique because of its scope and also because of the results obtained, may be of considerable value to other countries in their efforts to achieve similar goals.

In 1973, Chilean ports suffered from nearly all the drawbacks which usually characterize Latin American ports. Very powerful trade unions existed that not only had secured exceptionally good terms of remuneration for their members but also exercised considerable influence over the way in which port work was organized and carried out, and this adversely affected productivity. The administration of ports by the State-owned Chilean Port Corporation (EMPORCHI) was hampered by labour problems as well as by inflexible administrative rules and by longstanding conflicts between cargo transfer and shipping operations and Customs and fiscal control. Port equipment was usually old and poorly maintained and was not always available; it was often employed in the performance of tasks for which it was unsuitable by workers who, more often than not, had not been properly trained in its use. The systems of port charges were complicated and did not favour the efficient use of facilities. These systems, coupled with cumbersome administrative practices, were largely responsible for the fact that port warehousing facilities were always full. Instead of facilitating the rapid and safe transit of goods, the warehouses had become places where imports remained for long periods of time. In addition, cargo was subject to serious security problems due to theft and mishandling.

The above-mentioned irregularities became entrenched in the course of a lengthy procedure in which successive attempts to streamline harbour operations by various governments always had a marginal impact in the face of the persistence shown by those who controlled the system. Some traditions and practices became so thoroughly established that, even though they were recognized as being the causes of inefficiency, the political authorities felt unable to eradicate them. Consequently, infrastructure built at considerable cost and effort was underutilized and operated at a loss.

The modernization of Chile's ports was based on two laws, one of which amended labour practices while the other changed the way in which the ports were organized; changes related to management and port charges were also made. The careful preparations for the changes implemented in 1981 were made over a year in advance. They resulted from a diagnostic study that had taken several years to prepare and from the permanent implementation of measures to improve the

situation, that had paved the way to change. In mid-1989, when this report was completed, parts of the initial strategy had still not been implemented.

The changes made have been very diverse, and the most important are listed below:

a) A change in labour practices, both on ship and on shore, consisting of the elimination of the requirement to be in possession of a registration badge before being able to work in ports, and of the provision of extensive job opportunities for all applicants. The distinction between dockside workers and shipside workers with their different types of contracts, forms of payment and job shifts which resulted in considerable inefficiency, was also abolished. That practice was replaced by integrated ship and shore operations under the management of stevedoring companies.

b) The restructuring of EMPORCHI, which had formerly used its own employees and equipment to handle all cargo on land. The corporation reduced its labour force substantially, sold equipment and auctioned off port warehouses and premises to private individuals, while handing over the operation of the port to private stevedoring companies that compete for contracts from ship or cargo owners. Currently, the main responsibility of EMPORCHI is to administer port areas and to regulate private sector operations within these, maintain control over cargo stored within the ports, build and repair its own infrastructure and equipment, and charge fees for the use of various port services.

c) A reform of the system of port charges to simplify its structure, and to make possible an increase in charges for the use of port areas and warehouses in order to stimulate a better use of available infrastructure. Payments for cargo transfer began to be collected primarily by private stevedoring companies which, in the majority of cases, provide such services. The rates and terms offered by these companies are fairly competitive. EMPORCHI has price lists for transfer services performed by its own employees with its own equipment; recourse is had to those services from time to time, especially under agreements with Bolivia and other neighboring countries.

d) A reform of the Merchant Marine Act, which opened both coastal and international cargo shipping to vessels sailing under foreign flags, thereby eliminating the practice of cargo reservation.

e) A number of changes in Customs practices, which speeded up cargo inspection and simplified administrative procedures for the payment of duties and the removal of goods.

Table 1 summarizes the principal measures that have been adopted since 1973 in these five broad areas, together with their main impacts. It can be seen that the measures vary considerably in nature and in most cases did not involve legal changes, but were rather of an administrative type.

Table 1

SUMMARY OF THE MAIN LEGAL PROVISIONS WITH REGARD TO THE RESTRUCTURING OF PORTS

Provision	Year	Number or content	Effect on the port system
Merchant Marine Act	1979	Decree-Law 3059	Liberalized system of contracting shipping
Shipping Act	1979	Decree-Law 2222	Liberalized system of contracting shipping
Freezing of registration badge system	1978-1981	Unofficial suggestion from economic team to the Director of the Department of Coastal Waters and the Merchant Marine	Increased number of casual labourers
Freeze on the purchase of equipment by EMPORCHI	1975-1981	Veto by the Minister of Finance with respect to investments in the public sector	Encouraged private sector to engage in port operations
Sale of EMPORCHI equipment	1975-1982	Unofficial suggestion from economic team to EMPORCHI	Encouraged private sector to engage in port operations
Reduction of EMPORCHI staff	1980-1981	Various Vice-Ministry of Transport decrees having force of law that encouraged early retirement	Permitted establishment of private firms with trained staff
Abolition of registration badge requirement for shipside workers	1981	Law 18 032, abolishing registration badges and providing compensation of workers holding them	Permitted integration of jobs performed in ports
Number of port shifts increased to three	1981	Resolution 12600/398 of the Department of the Maritime Territory and the Merchant Marine (DIRECTEMAR) (formerly Department of Coastal Waters and the Merchant Marine)	Increased port capacity
Establishment of concessions in ports	1981	Law 18 042, providing that EMPORCHI no longer exclusively responsible for dockside and establishing a system of concessions	Enabled private sector to invest in ports
New port charge system	1981	Supreme Decree 198, setting new rates on port services	Increased efficiency in use of infrastructure
National Customs Service decrees and resolutions	1975-1981	DFL 3-2345, DFL 10-2345, DFL 30, Ministry of Finance Decree 26, resolution 850	Increased efficiency in use of infrastructure
National Customs Service decrees and resolutions	1981-1987	Resolutions 1148, 2400 and 1654; Ministry of Finance Decrees 224 and 845	Increased efficiency in use of infrastructure
Abolition of port worker's licenses (PTP)	1986	Law 18 664, amending Law 18 032 in order to abolish PTP	Eliminated possibility of establishing new monopolies in connection with port jobs
Legal requirements of stevedoring companies	1986	DST 48, requiring companies to have a known domicile and deposit a guarantee with the Labour Inspection Office	Permitted a balanced wage system to be established

Source: Ingenieros y Economistas Consultores Ltda. (INECON).

The modernization of Chile's ports had a favourable impact on the productivity of port operations, by ensuring that more efficient use was made of infrastructure and other inputs such as labour and equipment. Higher productivity resulted in greater cargo transfer capacity without the need for additional infrastructure. It also permitted very significant increases in the volumes of cargo transferred, and helped make up for the shortage of berths that were destroyed by the earthquake which affected central Chile in 1985. Modernization also resulted in a substantial decrease in port charges.

Performance reached in terms of tons per metre of berth more than doubled at the port of Valparaiso between the early 1970s and 1988. In San Antonio and San Vicente/Talcahuano, increases in this variable were even more spectacular.

Performance measured in terms of tons transferred per hour per hatchway also doubled between 1970 and 1985 in the case of copper, doubled between 1975 and 1985 in the case of fruit, more than doubled within the same period with respect to break-bulk cargo, nearly doubled between 1980 and 1985 in the case of general containerized cargo, tripled between 1975 and 1985 with respect to sawn wood, and more than tripled during the same period in the case of logs. In other words, there were very substantial improvements in respect of practically all types of cargo.

As a result of the reforms of the labour system implemented in 1981, hourly wages declined. For example, in Valparaiso, stevedores who used to earn the equivalent of US$2.87 (1986 value) on 6.5 hour shifts in 1980, earned US$1.67 per hour on 7.5 hour shifts in 1986. Hourly wages in 1986 were 58% of those paid in 1980. As explained in chapter IV, workers were compensated for their loss in benefits by monetary payments proportional to their average remuneration during the preceding six months and depending upon the date on which they reported back to work following the strike declared to protest against the changes made in the labour system.

The price for loading a box of fruit dropped from US$0.73 in 1970 and US$0.72 in 1975 to US$0.54 in 1980 and US$0.26 in 1986—i.e., it fell to approximately one third of its 1970 price during the period under review. The decline was even more spectacular in the case of sawn wood and logs in that, between 1970 and 1986 the cost of transfer fell to a quarter of what was charged in 1970. In the case of copper bars and sacks of fish meal, the costs were halved.

Higher productivity and lower costs did not result only from the institutional modernization of the sector. In almost every case, an important role was also played by the application of new technologies such as, for instance, the introduction of new cargo systems, new cargo-handling equipment, and taking advantage of the economies of scale arising from the increase in the amount of cargo moved.

It is worth drawing attention to the general lessons to be learned from these exercises in port modernization that may be applicable in the future to Chilean ports and to the port systems of other countries. What were the main ingredients of the modernization process in Chile? What were its shortcomings? What may be needed to consolidate the process?

In the case of port modernization in Chile, one important consideration is the impact had by the economic model introduced by the government in 1973, which was based largely on the opening up of the economy to external trade. This focus on openness explains why port reform gradually acquired more and more importance as the model was applied and as its application caused an

increase in the volume of cargo to be moved in the ports. During the initial phase of the process, the required increase in productivity came from the improvement in co-ordination and on-the-job discipline in the ports brought about by the military government. However, towards the end of the 1970s, as a result of the economic boom in the country, the situation in the ports had become a considerable obstacle to the success of the economic model itself, and this forced economic policy makers to speed up the application of the reform.

While the fact that Chile had a military government was important in terms of the modernization of the country's ports, it is not enough to explain the Chilean port reform. It must be recognized that the idea behind the reform stemmed more from the way the Chilean economy was evolving in response to the economic model adopted by the government, than from the military nature of the government.

As a result of the Chilean experience, it has been possible to identify the real potential for and obstacles to a process of port modernization, and the strategies that can be used to deal with the obstacles.

Moreover, Chile's port modernization process shows other countries a road they may take and points to the main difficulties they may encounter along the way.

The difficulties experienced by the authorities responsible for the port sector in establishing a truly operational plan providing for what is needed to modernize the system are a matter of critical concern. It is quite common, on the one hand, for the government authorities responsible for the sector to change frequently for political reasons, abandoning their posts just when they have become familiar with the problems encountered, and, on the other hand, for interest groups with links to the sector to show great resilience and firmness in their stand on certain issues coupled with an ability to play the waiting game when the government is in a position of strength and a great sense of timing in using periods of weakness or favourable circumstances to enhance or strengthen their position. Thus, while those in favour of modernization behave erratically, showing little continuity, those who favour the *status quo* are coherent and persistent in their approach. In the case of Chile, it took nearly eight years (two more than a president's normal term of office in that country), to arrive at a strategy on how to deal with the problem in depth. However, the time spent designing a strategy was not the only delay experienced; considerable time was also lost waiting for a favourable set of circumstances.

A key element of the reforms is the compensation of labour groups for the loss of their acquired rights. The price of compensation can be high, since some groups enjoy considerable monopolistic advantages, but the benefits which can be obtained are also high. Although compensation for acquired rights does not guarantee the absence of disputes over the changes made, it gives the authorities a considerable moral and political base on which to undertake them. In addition, it greatly reduces the likelihood of support from third parties—whether national or foreign—should disputes arise.

Another aspect of the reforms is the early definition of the port system desired. In the case of Chile, the doors were opened to private cargo-handling companies to operate within the country's ports, and that was done well before other changes were finally made. The exercise was begun by providing the employees of EMPORCHI itself with incentives to work as private operators, by compensating them generously for their dismissal from the company, and bidding was also opened in

respect of EMPORCHI's equipment. Privately-operated stevedoring companies owned by former EMPORCHI personnel gradually became more and more important and created a different atmosphere within the ports. It was those companies which, in the last phase of the exercise when the registration badge system on which the monopoly enjoyed by the stevedores depended was discontinued, made it possible to keep operations going under a system that differed from the traditional system. This happened because they were able to rely on men accustomed to performing and supervising port work, and were structured in such a way that they could hire stevedores in the manner called for under the new system.

The modernization of ports is not restricted to labour questions, but also bears upon shipping policy and monopolistic practices to which it might give rise. Thought must be given to the formulation of rules as to who constructs, maintains and operates the infrastructure; solutions must be sought to problems relating to rate policy, which are vitally important if port infrastructure, equipment and space are to be used efficiently, and problems of Customs control, many of which account for deficiencies in the operation of the port system, should also be addressed. The use of a comprehensive approach does not, however, mean that everything should be dealt with simultaneously. In the case of Chile, at least, a gradual procedure was adopted, and some stages have still not been completed.

Co-operation among the various agents participating in the modernization process is also essential. In Chile, for example, an important role was played not only by the various government agencies concerned (Ministry of Labour and Social Welfare, EMPORCHI, Department of Territorial Waters and the Merchant Marine), but also by co-operation among private professional associations such as the Chilean Chamber of Shipping, made up of shipping lines which utilize port services. Chile's port and maritime legislation is complex and contains regulations and provisions relating to different agencies and institutions, which have to act in concert in any process of modernization. Naturally, it is difficult to get them all to agree to launch a modernization exercise. Some of the agents are likely to oppose reforms even when they are offered attractive terms of compensation for reaching an agreement.

It is also important to consider implementing a well-designed advertising and public relations strategy that is broad enough in scope to deal with the question of modernization. The public should be kept adequately informed and an attempt should be made to convince it of the importance of modernization and to make it aware of the types of abuses that modernization is intended to eradicate. The cause of modernization has to win the support of the population. In the case of Chile, a well orchestrated publicity campaign was conducted through newspapers backing the government and through television. It was based on background material especially compiled for it, which showed the shortcomings of the existing system. When the time of confrontation arrived, adequate material was available to demonstrate to the public at large the shortcomings that modernization aimed at eliminating.

The approach taken in Chile had its failings, which will be noted in order to put the Chilean experience into its proper perspective, and special attention will be drawn to some of them.

If the period 1974-1975 is taken as the starting point of the modernization effort, there may be reason to think that the authorities took too long to get the process fully implemented. Six or seven years (until 1981) seems well in excess of the time needed. Much improvement could surely be made in this respect in other modernization exercises. In Chile, the plan to carry out such far-

reaching changes took a long while to mature. Furthermore, the weak international position of the government, which lived under the threat of an international boycott from its very inception, had a significant impact on the amount of time it took to get the reform under way. The problem faced by the government is reflected in such steps as the adoption of special measures in favour of the maritime unions in order to keep their support in the early days of the regime. The time required to implement this type of reform could very well have been reduced to two or three years; in other countries it could have been even shorter.

Port modernization in Chile left certain feelings of resentment in some labour circles owing to what might be regarded as a lack of generosity once the objectives of the exercise had been attained. This lack of generosity was especially notable in the case of the treatment meted out to those workers who were the slowest to return to work following the strike called in response to the reform laws of 1981. There are still many court cases pending that could have been avoided, and some union leaders who wield significant influence are against the new system.

It should also be noted that, although registered unionized port workers received monetary compensation, the new system did not make provision for a legal system which would adequately protect the labour conditions of workers. The process of achieving a more even balance between the rights of workers and the interests of the port system has been slow. Initially, the workers did not enjoy any work stability, most of them being hired by the day. They were paid the equivalent of the minimum daily wage, but as there were many days when no work was available, their actual income was in many cases well below the minimum monthly wage. This practice was sustained by the stiff competition among the various stevedoring companies. A system offering greater stability and a higher income to workers is only now beginning to take shape. The design of a labour system which precludes abuse on the part of employers (the stevedoring companies, in this case) is essential to prevent a return to the irregular practices of the past.

Finally, the future of EMPORCHI as an institution has so far not been well defined. There is still confusion regarding key issues such as the regionalization of ports or the participation of private enterprises in projects for the construction or improvement of port facilities. In other words, some important aspects of a modern institutional system are still incomplete because no policies have been laid down.

Over the past 15 years, Chilean ports have been able to absorb considerable growth in the volume of cargo without an increase in infrastructure, some of which was in fact destroyed by the 1985 earthquake. This performance was the result of the smooth introduction of new technologies such as containers for handling different types of cargo, the incorporation on a tremendous scale of refrigerated ships for the transport of fruit, the use of improved methods of loading wood and wood products, and other innovations. Some of these technological changes became economically feasible because of the increase in the volumes of cargo handled. Substantial improvements were also made in Customs practices and tariff systems. However, within the whole scenario of rising productivity, the most important role has been played by the modernization of the kinds of work performed, which made it possible to eliminate the monopolistic practices and brought about greater competition in cargo handling within the ports. The fact that users have a number of options to consider in deciding what services they require has made it possible to tailor practices to the actual needs of clients, instead of clients' having to adjust to inflexible port practices. This change, which looks so simple, constitutes a real revolution that has considerably improved the competitiveness of external trade and made the Chilean economy more dynamic.

Although some of the measures to strengthen the new port system include certain requirements for stevedoring companies, it is not clear whether adequate precautions have been taken to ensure that port operations will continue to be carried out in a competitive environment. Competition is crucial for ensuring that port users benefit from improvements in productivity. Thus, for example, it is all too apparent that stevedoring companies owned by shipping lines play a leading role in port operations, and those lines are associated with liner conferences and consortia that establish rates for the shipment of general cargo and fix the terms of the contracts offered to users. The social credibility of the Chilean port model requires that a balance be struck between the interests of all suppliers and users of port services, and cannot be maintained if new monopolies come into being.

In the future, more infrastructure will have to be built in order to accommodate the increase in traffic. The available capacity is obviously beginning to prove inadequate. The infrastructure will have to be expanded very quickly, since congestion can give rise once again to the old malpractices or spawn others. Moreover, enough flexibility must be maintained to support private-sector initiatives regarding the building of infrastructure, and to complement those initiatives with such public-sector projects as may turn out to be necessary.

Together with the foregoing, constant vigilance must be maintained to ensure that port operations remain efficient and that entrepreneurs connected with the sector, groups of workers or a combination of both, do not resume monopoly practices. There is a trend among those who work in ports to fight to ensure that their own interests are served by the way in which the ports are organized. Those workers wield considerable power and are usually well organized. It is thus very important to ensure that a vigilant authority is always present to promote the development of competitive practices, and that the interests of the users and of the community in general will prevail.

Chapter II

CHANGES IN THE ORGANIZATION OF CHILE'S PORT SYSTEM

In order to fully understand the scope, difficulties and impact of modernizing Chile's ports, it is well to have a clear picture of how the ports operated prior to the modernization exercise and to perceive the changes actually made in different port operations in the course of time.

In this chapter an attempt will be made to provide such a picture. First, a brief outline is presented of the long-term evolution of the port labour system, as an aid to understanding the aims of the changes introduced. Next, the way in which the ports operated in the early 1970s—before the changes were begun in 1973—is described. Finally, a description is given of the evolution of the system between 1973 and 1981, the year in which the reform of the institutional system which had existed in Chilean ports up to that time came into force.

A. HISTORICAL BACKGROUND

In Chile, port operations have historically been determined by the relationships between the following leading actors: ship- and cargo-owners (the users of ports); the port authorities, who own the port infrastructure and regulate its operation; the National Customs Service, which is responsible for monitoring cargo as it enters and leaves the country; the maritime authority, which, operating under the Chilean Navy, is responsible for the day-by-day conduct of port activities; and shipside and dockside workers.

The degree of participation of each of these actors in port work has varied in the course of time according to the transport technology used, the evolution of the institutional system, and the way in which the workers are organized. The port situation in Chile in the 1970s was the culmination of a long process of gradual change in the functions performed by these various actors.

When the country became a republic, and even before in colonial times, ports were under the control and supervision of the National Customs Service. The first general Customs decree, which established detailed regulations on the loading and unloading of goods and their storage, was enacted in 1811.

Although initially almost all physical cargo-moving operations were the responsibility of shippers or their agents, a difference was established very early between operations performed on board ship and at sea, and operations carried out on shore. Any shipowners were free to conduct the former, while not only were the latter monitored and regulated by the National Customs Service to stop smuggling and ensure that Customs duties were paid, but they also had to be performed by

workers authorized by the Customs Service. Moreover, the port authority, which under different names and different government agencies was responsible for controlling activities in the harbour area, gradually became responsible for a growing share of the tasks, hiring personnel directly to perform these. Thus a distinction began to be drawn between shipside workers, who were responsible for all operations on board ship and for those related to the off-loading of cargo, all of which came under the jurisdiction of shipowners and their agents, and dockside workers, who were responsible for moving and storing cargo and for dispatching it from the port and came directly or indirectly under the jurisdiction of the port authority and the National Customs Service.

Until the beginning of this century, the only major infrastructure works built by the State at Chilean ports were Customs wharves and warehouses. The wharves operated on the bases of lighters which carried cargo to and from ships. However, the increase in traffic and the need for greater security and efficiency in loading and unloading systems convinced the authorities of the need to provide the country with adequate port infrastructure and an improved port system, in which breakwaters would be included.

The infrastructure now serving the largest ports in Chile was built during the first 40 years of this century. Construction of the present port of Valparaiso was begun in 1912 and completed in the late 1930s. Construction of the port at San Antonio, which has been used from colonial times for the movement of wheat, was begun in 1914 and completed in 1930. During the same period, major construction work was done at Antofagasta, Coquimbo and Talcahuano.

From the beginning of this century, port organization had been put through various plans of restructuring as part of an effort to solve three very important problems, as follows:

a) The need to design infrastructure, to engage contractors to build it, and to supervise its construction. This task was initially entrusted to a National Ports Committee, later to become the Department of Maritime Works under the Ministry of Marine Affairs (1927), which also had jurisdiction over the Chilean Navy. In 1942, that Department was put under the Ministry of Public Works and became the Department of Port Works (DOP).

b) The need to operate port infrastructure efficiently. In addition to organizing the work performed within ports appropriately, there was also a need to purchase cargo loading and unloading equipment such as stationary cranes, and cargo moving equipment such as locomotives, trailers, wagons and mobile cranes. These functions were a source of constant conflicts. The designers and builders of infrastructure maintained that the acquisition and maintenance of equipment and infrastructure should be their responsibility. Port operators claimed that they were responsible for the Ports Service, which should independently handle the operation of ports and, as part of that function, should be responsible for equipment and the maintenance of infrastructure. As for the Customs Service, which had always played a leading role because Customs revenue contributed substantially to state financing, it demanded that its requirements be given priority over those of other agencies.

c) The need to supervise the entry of goods into the country, which was the responsibility of the National Customs Service. For this purpose the Service imposed a number of requirements on operations within port areas, and therefore demanded that the Ports Operation Service should come under its direct jurisdiction or under that of the Ministry of Finance.

Although a number of alternative solutions were successively applied in this regard, the authority of the Customs Service over port operations was almost unopposed until the promulgation in 1960 of Decree No. 290, with force of law, which established the Chilean Port Corporation (EMPORCHI). Even after EMPORCHI was established, Customs regulations continued to weigh very heavily on international cargo shipping operations and still do today.

The development of the labour system has been just as important as or more important than the institutional organization of ports and the participation of various agents in their administration. As mentioned above, a distinction should be drawn between shipside workers and dockside workers.

Originally, all land and ship personnel were free to work where they wished. The only requirement was to carry a bronze badge issued by the maritime authority; the badge was proof that the person carrying it was honest and of good character. Unions had been in existence since the past century but their power was quite limited owing to the systems used to hire workers. It is important to understand these systems since changes in them are responsible for a considerable proportion of the changes that have occurred in port labour organization over the years.

All workers hired by shipowners or their agents, i.e., shipside workers, were once individually hand-picked. This system gave the employer a very effective tool for ensuring productivity and discipline at work. As time went on, the system was modified gradually and decisively until it took the form of organization which predominated in the sector prior to the reforms of 1981.

In time, the question of the hand-picking of teams of workers became as important to labour relations as that of wages and salaries.

An early occurrence in the process of changing this system was the establishment in 1943 of the Maritime Confederation of Chile (COMACH) to which all maritime unions belonged; this was followed in 1944 by the establishment of the Chilean Chamber of Shipping, whose membership consisted of shipping agencies. It was an outgrowth of the Maritime and Ports Department of the Valparaiso Chamber of Commerce. In 1942, two years prior to its establishment, on the occasion of a very serious port strike that culminated with a ruling handed down by the Judge of the Court of Valparaiso, the maritime unions arranged that their members should be paid on the basis of the tonnage moved. This victory, added to the increasing complexities with regard to the payment of other monetary, social security and health benefits, made the centralizing role played by the Chamber of Shipping especially important. As the workers were employed by different agents, the settlement of their earnings was not easy task.

The creation of the Chilean Chamber of Shipping and of COMACH, which had always been a *de facto* trade-union organization without any legal authority until after 1973, provided the framework for all the negotiations, disputes and agreements on which most labour-related institutions in Chilean ports were based until just before the restructuring process was set into motion. Agreements were no longer signed between trade or maritime unions and individual shipping agencies, but rather with the Chamber of Shipping. As a result of collective bargaining, the costs borne by shipping agencies and also, of course, by shipowners and shipping companies on account of payments to maritime unions ceased to be a matter of competition, once there were no differences between firms in that respect. Exporters and importers always avoided contractual relations with shipside workers. It is thus not surprising that cost increases resulting from agreements reached with the unions were almost all passed on to the exporters or final consumers. So long as the State

did not adopt a more rigorous attitude, entrepreneurs could not rely on their negotiations to be as firm as those held in more competitive sectors. It might even be said that the only real negotiations were those carried out between the State and the maritime unions.

Labour problems that had once been negotiated between the unions and individual shipping agencies were passed on to COMACH and the Chamber of Shipping. When it came time to hold negotiations, the unions had COMACH negotiate on their behalf and the maritime agencies had the Chamber of Shipping represent them. This does not mean that no negotiations were held between individual unions and shipping companies or agencies, but such negotiations were usually confined to the application of existing general agreements or to specific labour disputes. As time went by, the system started becoming extremely complicated. Indeed, at the time the institutional changes were effected, 132 agreements were in existence. Its responsibilities in terms of making payments in respect of official holidays and of some centralized remunerations, discounts and benefits turned the Chamber of Shipping into an administrative institution with over 300 people on its staff.

In 1966, the maritime unions managed to win a battle which was vitally important for the future evolution of the system. By means of Supreme Decree (M) 153 of 1966, a registration system was instituted for all unions. Under that system, labourers and white-collar workers could be employed only if they were registered in the unions. Applications for registration were submitted in lists to tripartite hiring offices made up of representatives of the unions, the Chamber of Shipping and the labour authority; the offices also called in representatives of the maritime authority to handle technical questions.

At the same time as the registration system was established, a change occurred in the system of designating the members of each team of workers. This change was of vital importance for the way in which the ports functioned.

A system regulated by a cuadripartite commission was established which prevented abuse of shipside workers by employers through the practice of hand-picking the members of work teams; however, the new system turned out to be virtually impossible to implement since it required a committee made up of a union representative, a representative of the Chamber of Shipping, a third from the maritime authority, and a fourth from the Labour Inspection Office to meet daily in every port in the country and in each shipside workers' union. Soon, the selection process began to operate in the absence of official representatives, and in practice the employers' representatives lost all their influence in the process in view of the power exercised by the unions. The selections were made by a union leader appointed on a rotational basis. Thus, there was no reason to object to the use of an automatic mechanism for selecting the members of teams. Each worker received a number which he retained for many years and which in theory was used to select members of the teams strictly in order of precedence, so that the worker holding the first number was not called again until everyone else on the register had been called. Because it moved in a circle, this mechanism came to be known as the "merry-go-round." The system was subject to abuse; for instance, workers could refrain from answering when their names were called, in order to wait for a better job on another ship. The "merry-go-round" was sanctioned by the regulations covering harbour work promulgated by the Central Commission in charge of Maritime, River and Lake Employment, a body comprising representatives of the maritime, labour and health authorities.

A worker selected by means of the "merry-go-round" system was given a contract with which he reported for a job on the team to which he was assigned. Such contracts served as passports for daily labour, and spawned a practice wherein workers in possession of a badge subcontracted work to other workers on an informal basis. The badge gave union members ownership of the right to work and became a highly valued privilege.

As the system under which labour operated and was controlled became more complicated, the maritime unions were expanding by admitting new groups of workers, some of whom performed tasks on shore checking the transfer of cargo from shipping agents to the Ports Services or to the National Customs Service. While all this was happening other important changes were also taking place with respect to cargo handling and storage on land.

Shore personnel, who had originally worked under the supervision of enterprises authorized by the National Customs Service, began to be supervised increasingly by the Port Service until virtually all operations were carried out by personnel engaged by the Ministry of Finance. Shore personnel operated under a system that was completely different from that applied to shipside workers; even their shifts, hours of work, guarantees and wages were different. This division constituted yet another major obstacle to the effective operation of ports.

EMPORCHI was established in 1960 with the aim of improving the operation of ports and separating transport operations from fiscal operations, which were the responsibility of the National Customs Service. Whereas the Port Service had operated under the Ministry of Finance, the new enterprise was put under the office of the Undersecretary for Transport of the Ministry of Economy, Development and Reconstruction. Later on, that office became the Ministry of Transport and Telecommunications, thus emphasizing the role of ports as an essential link in the transport chain.

The new organization substantially improved the potential for conducting port operations efficiently, yet the National Customs Service continued to exercise considerable control in that connection. Although port property and all port storage areas with the exception of Customs abandonment warehouses were transferred to EMPORCHI, which was made solely responsible for the transfer, carriage, reception, storage and dispatch of cargo, formalities with respect to the entry and appraisal of goods remained in the hands of the National Customs Service. This had a significant impact on the operation of ports.

From the labour point of view, it should be noted that an unfortunate split occurred between the two categories of EMPORCHI workers. The first category was that of the handlers, who moved cargo to and from the wharves and warehouses and performed other tasks relating to cargo in those areas; the second consisted of port and Customs white-collar employees. While the former were paid a very substantial portion of their wages according to the tonnage they handled and received various incentives and rewards, the latter were paid relatively low Civil Service salaries. These differences caused constant clashes and problems with respect to the care of international cargo.

This was the system that began to undergo changes starting in 1973, the year the military government took power.

B. OPERATIONAL STRUCTURE OF THE PORT SYSTEM BETWEEN 1970 AND 1973 AND MAIN CHANGES UNTIL 1981

As explained in the preceding section, the labour system in ports prior to 1981 began to take shape in the 1940s. As time went by, this system was consolidated by means of certain gains achieved by the maritime unions—badges, the "merry-go-round" system, the composition of work teams, a series of real increases in rate, rate surcharges, and a wide range of benefits. The system became so complicated that a very substantial bureaucracy was required to administer it.

1. *Labour system from 1970 to 1973*

The labour system applied in ports between 1970 and 1973 operated as follows: through the intermediary of its agent, a vessel arriving at port had to comply with all the formalities required by the Naval authorities, the Agricultural and Livestock Service, the National Customs Service and EMPORCHI and, as laid down in the agreements corresponding to its case, request the workers needed to unload or load. For these purposes, the ship's agent had to go to the various trade unions that supplied personnel for work on board ship, and to EMPORCHI to request personnel for dock work. By law, the maritime unions were the only ones authorized to supply men for jobs on board, while EMPORCHI was the only enterprise authorized to provide men for dock work.

The number of men which EMPORCHI made available to an agent was usually not large enough for the tasks at hand, while owing to the way in which the agreements had been worded, the unions providing shipside workers usually forced the agent to employ too many of them. The situation was such that shipside workers sometimes tipped dockside crane operators to increase their productivity when handling certain high-paying cargo, thereby raising their earnings. Such cargo was called "good cargo."

Although productivity is dealt with in chapter III, some examples should be given of the practice described above. Some cargo was regarded as "bad;" thus, in the Eighth Region, cellulose was worse than logs. However, when cellulose handling was mechanized it became "good cargo," since the same numbers of men were used, less work was done and the pay was higher because productivity was higher. The same thing happened in the case of bars of blister copper. Until about 1975, the bars had to be stacked up in lots and strapped, which required considerable work and time; for that reason, the cargo was considered "bad" by longshoremen. Afterwards, in order to increase productivity, copper exporters began to send to the ports lots that were already strapped and ready to be loaded; then this particular cargo became quite profitable for longshoremen.

Returning to the subject of port labour, it should be noted that, once workers had been requested, the trade unions used the "merry-go-round" system to select the members of gangs. Dockhands were chosen by EMPORCHI. From the period 1970-1973 until 1981 the following trade unions existed:

a) The *Stevedores' Union*. This was the oldest, largest and most powerful union. It elected the President of COMACH.

b) The *Packers' Union*. The packers sealed packages that burst open or that were opened on the instructions of the National Customs Service.

c) The *Watchmen's Union*. Watchmen were responsible for the security of cargo and stood guard at the access gate to each vessel.

d) The *Harbour Auxiliary Sailors' Union*. The main duties of these workers were to open and close cargo hatches and to sweep the ships; they also helped stevedores by finding them tools for specific purposes when asked to do so. Their presence on Chilean vessels was optional, but it was compulsory for foreign vessels to use their services.

e) The *Harbour Employees' Union*. This union was established as a result of the need to supervise and check the work performed on board vessels and to co-ordinate it with the work performed on land. Some of its functions were born of the extreme complexity that had begun to characterize the system of paying shipside workers, which made it necessary to hire workers in this union to check the movement of cargo so as to be able to pay each of the workers involved. The complexity of the system also made it necessary to employ over 300 persons in the Chamber of Shipping and other offices where payments were centralized on behalf of smaller unions, who were responsible for paying holidays, stipends and income taxes of individual longshoremen, and for calculating and paying benefits and special bonuses. This was done for all the country's trade unions.

f) The *Moorers' Union*. Members of this union carried out the tasks involved in the lashing and unlashing of gigs and lighters.

g) The *Union of Private Maritime Employees of Shipping Companies in the Port and Customs Facilities at Valparaiso (SIPRECNA)*. This union existed only in Valparaiso, which was the only port having warehouses with more than one floor. At the other ports, the work done by these employees (processing documents relating to the delivery of goods to EMPORCHI and marking, stamping and checking parcels) was performed by harbour personnel.

A boatmen's union also existed at one time but was eventually absorbed by the Stevedores' Union. The salary scheme for boatmen was established under the agreement with the stevedores.

Some idea of the power wielded by maritime unions may be gleaned from the fact that the badge system was so tight that only union members with a great deal of influence had access to it. The number of badges was totally inadequate. A study carried out by consulting engineers Barraza and Ayarza[1] indicates that in 1967 there were 3 030 workers with badges, while 272 were substitutes and 2 315 (41.2% of the total) were irregular, nonunionized workers without official status. These irregular workers, who may be found in many of the world's ports, were given the name of "*medio pollo*" in Chile.

This situation worsened as the volume of cargo grew. In a document issued by the Chamber of Shipping in 1980, just before the badge system was abolished, it is noted that at that time there were close to 3 000 regular workers (with licenses), 1 000 substitute workers (who constituted a certain percentage of the number of workers with badges and were permitted to work for a limited time in order to decide if they wished to apply for a badge), and approximately 19 000 of the irregular workers. However, the income received by regular workers accounted for about 67% of the total remunerations paid by the shipping agencies, while substitutes accounted for 15% and irregulars for 18%. It should be noted that only workers with badges were paid agreed social benefits. They worked on the high-income shifts, while the irregulars worked on shifts with low income and were

not paid any social security benefits, since they shared a part of the total paid to regular workers for specific shifts.

Table 2 shows a list of the benefits received by the members of the Stevedores' Union in 1980 in addition to their wages for handling cargo. It may be noted that all kinds of benefits were received for a range of things, from an incentive bonus amounting to 5% of a worker's total remuneration to contributions to a co-operative and various clinics, and for an education grant, etc. The total of all these benefits for workers in Valparaiso amounted to 52% of their base pay.

As far as dockside workers were concerned, a Dockhands' Association existed within EMPORCHI, but it did not have the power to designate workers to shifts or to provide the benefits received by shipside workers. Dockhands were civil servants who in general earned far less than shipside workers; however, the fact that they used to be paid more than EMPORCHI's administrative employees created a rather conflictive situation.

To provide some idea of the number of workers required for various types of cargo and vessels, table 3 lists the number of persons occupying various posts and their respective unions. It can be observed, for instance, that before 1981 about 107 workers per shift were required to load a vessel with 201 000 boxes of apples, and that the number of worker-shifts per vessel was 794.

The size of the teams did not change much over the years, since the system applied made no provision for the increases in productivity brought about by advanced technology. The unions always refused to adjust the system of work to keep it in line with the times. This was clearly evident in the case of bulk cargos such as wheat, where a maximum of two persons was enough and the unions imposed a team of nine workers because they had the monopoly.

The problems of working hours and continuity in duties were among the main abnormalities of the badge system and were crucial issues in the reforms that were later introduced. Problems of co-ordination arose under the system of work divided into duties on board ships and on land because of the difference in working hours. In Valparaiso, for example, the hours of shipside workers were 8 a.m. to 12 noon and 2 p.m. to 8 p.m. for the first shift, and 8 p.m. to midnight for the second shift. The second shift was paid time-and-one-half overtime, as were those who worked at lunch time. EMPORCHI workers were on shift from 8 a.m. until 2 p.m. and 2 p.m. to 6 p.m. The second shift was from 6 p.m. until midnight. This system broke down in the 1970s, when the same workers were on shift with overtime pay from 6 p.m. until 9 p.m. In practice, the second shift was discontinued and there was only one work assignment per day.

The situation with respect to working hours was similar in San Antonio, except that there was one hour between 7:30 and 8:30 p.m. when stevedores went out to eat. There was no work on Sundays nor on religious and civil holidays unless appropriate overtime was paid to stevedores; in 1981, such overtime was 400%.

These were the schedules on paper only, since work usually began an hour after the time indicated because the assignment of men to their teams was completed after 8 a.m., because the men began to get ready after that, or because the mechanized equipment was not made ready until later.[2] Furthermore, over one hour of work was lost because of changes in shifts: at 6 p.m. the dockhands changed and at 8 p.m. the shipside workers changed.

Table 2

BENEFITS EARNED BY THE LONGSHOREMEN'S UNION, 1980[a]
(*Percentage of income*)

Benefits	*Ports*			
	Group 1[b]	*Group 2*[c]	*Group 3*[d]	*Group 4*[e]
1. BENEFITS THAT CONSTITUTE INCOME				
1.1 Maritime holiday	7.46	7.46	7.46	7.46
1.2 Incentive bonus (for holiday work)	5.00	5.00	5.00	5.00
Subtotal	12.46	12.46	12.46	12.46
2. DIRECT CASH BENEFITS TO THE WORKERS				
2.1 Special contribution	4.00	4.00	4.00	4.00
2.2 Educational grant	4.15	4.15	4.15	4.15
2.3 Household grant	7.76	7.76	7.76	7.76
2.4 Tocopilla household grant	-	-	1.88	-
2.5 Death benefits	0.09	0.09	0.09	0.09
2.6 Retirement benefit	0.13	0.13	0.13	0.13
Subtotal	16.13	16.13	18.01	16.13
3. OTHER BENEFITS				
3.1 Clinic contribution (federation)	0.50	0.50	0.50	0.50
3.2 Co-operative contribution	1.14	1.14	1.14	1.14
3.3 Federation contribution	1.00	1.00	1.00	1.00
3.4 Benefits department	5.00	5.00	5.00	5.00
3.5 Social headquarters	1.37	1.37	1.37	1.37
3.6 Clinic contribution (trade unions)	1.08	1.08	1.08	1.08
3.7 Trade union contribution	1.00	1.00	1.00	1.00
3.8 Housing foundation	5.00	5.00	5.00	5.00
3.9 Welfare fund	-	1.00	-	1.30
3.10 Local clinics	0.10	0.10	0.10	0.10
3.11 Corral clinic contribution (union)	-	-	-	-
3.12 Income-earning union leaders	6.00	6.00	6.00	6.00
Subtotal	22.19	23.19	22.19	23.49
TOTAL	50.78	51.78	52.66	52.08

Source: Chilean Chamber of Shipping.

[a]The percentages correspond to agreements in force in 1980, but the types of benefits were those existing in 1970 and 1980.

[b]Arica, Iquique, Mejillones, Chañaral, Huasco, San Antonio, Talcahuano, San Vicente, Lirquen, Puerto Montt, Castro, Chonchi, Puerto Aysen and Puerto Natales.

[c]Antofagasta, Caldera, Coquimbo y Valparaiso.

[d]Tocopilla.

[e]Punta Arenas.

Table 3

TYPICAL STAFFING PATTERN FOR SERVICING SHIPS BEFORE 1981

Union	*Position*	*Staffing according to cargo*				
		Fruit[a]	*Sawn wood*[b]	*Logs*[b]	*Fish-meal*[c]	*Copper cathodes*[d]
ABOARD THE VESSEL						
Harbour	Ship supervisor	1	-	-	1	1
Employees'	Assistant ship supervisor	-	-	-	-	1
Union	Deck master	1	1	1	1	1
	Assistant deck master	1	1	1	1	1
	Ship's clerk	1	-	-	-	-
	Stowage master	1	-	-	-	-
	Stowage clerk	4	-	-	-	-
	Tallyman	4	6	6	4	2
Stevedores'	Foreman	4	1	1	2	2
Union	Assistant foreman	-	1	1	-	-
	Stevedore	32	66	72	40	18
	Forklift operator	4	6	6	-	2
	Gangway operator	4	6	6	4	-
	Delegate	-	2	2	1	2
	Winchman	-	12	12	4	-
Packers' Union	Packer	4	-	-	-	-
Watchmen's Union	Watchman	4	-	-	-	-
Harbour Auxiliary Sailors' Union	Seaman	12	-	-	16	-
ON THE WHARF						
Harbour	Dock master	-	1	1	1	-
Employees'	Assistant dock master	-	1	1	-	-
Union	Tallyman	4	6	6	4	-
Packers' Union	Packer	-	-	-	8	2
EMPORCHI	Dockhand	16	36	36	24	8
Dockhands'	Forklift operator	6	6	6	-	2
Association	Crane operator	4	-	-	-	2
TOTALS						
Workers per shift		107	152	158	110	44
Worker-shifts to load vessel		794	3 632	3 650	1 682	176

Source: Chilean Chamber of Shipping.

[a]Standard vessel with capacity for 200 676 boxes of apples.

[b]Standard vessel of approximately 35 000 cubic metres.

[c]Standard vessel with capacity for 7 150 tons of fish meal in sacks.

[d]Standard vessel that can load approximately 2 800 tons in two holds.

Consequently, of the 14 hours of work that should normally have been done, in Valparaiso only 12 hours of work was done while the total was 11 hours in San Antonio. The time lost by stevedores and dockhands as a result of stoppages, meetings and other causes should be subtracted from these figures. Since the work done involved both types of personnel, the failure of either one of them to turn up for work paralysed the port. Surveys carried out by the Chamber of Shipping showed that the hours of stoppage at the ports of Valparaiso and San Antonio between 1964 and 1966 were as follows:

Year	*Valparaiso*			*San Antonio*		
	Dockhands	*Stevedores*	*Total*	*Dockhands*	*Stevedores*	*Total*
1964	143	18	161	75	9	84
1965	66	162	228	278	186	464
1966	23	84	107	5	32	37

This meant that an average of a little over half an hour was lost a day and that only about 300 days of work were done a year. In other words, the ports were busy for only 39.4% of the time potentially available each year.

Another major failing in cargo handling operations was the lack of continuity of responsibility for cargo. Shipping companies were responsible for the cargo until it left the hook of the ship's crane. EMPORCHI carried the cargo to the warehouse but was responsible for it only when it entered the warehouse. There was, therefore, a no-man's land between a vessel's cargo hatch and the warehouse door where the shipowner had to assume responsibility although the goods were not physically in his custody. Companies often based their arguments in claim proceedings on this.

To sum up, port work used to be divided into two sectors with different working hours, forms of remuneration and labour regulations, despite the fact that technically speaking the job performed was the same. This made harbour operations cumbersome, expensive and full of drawbacks. The situation reached such a point that in 1972 the liner conferences declared Chile's ports to be "dirty," and consequently shipping charges went up 25%.

Another important aspect of the functioning of the port system relates to the National Customs Service. The Service, which is under the Ministry of Finance, collects duties charged on goods that are unloaded and maintains control over goods that are embarked. To that end, the Customs Ordinance authorizes Customs staff to undertake the valuation of such goods as they deem necessary. Given the tariff practices of the period and the severe import restrictions as a result of the closed economy model that was adopted by Chile in those years, the National Customs Service usually inspected all the goods that were imported and exported. This formality took a considerable amount of time, since Customs inspection hours were not well co-ordinated with the working hours of EMPORCHI. Customs inspection hours were from 8 a.m. to 12 noon, while the time between 12 noon and 2 p.m. was used to deal with administrative matters.

Formalities with respect to payment of duties and removal of goods from warehouses were quite complicated and long. They took about 15 days and always had to be done by a Customs

agent. Even today, Customs agents are appointed by the President of the Republic under the same terms as notaries, and charge commissions for their services.

There were no regulations concerning the immediate removal or the inspection of containerized goods, since containers had only just come into use at that time. The inspection and storage methods put considerable pressure on the operation of the warehouses and wharves of Valparaiso, the port from which the bulk of general cargo was moved.

According to the study by Barraza and Ayarza,[3] Customs formalities themselves were not the crucial factor in the long stay of goods in port areas (63% spent less than 60 days), but rather the shortage of funds on the part of importers, since at that time there were no credits for the payment of duties and a portion of their funds were locked up in a guarantee that the Central Bank required for a minimum time of 90 days. The aim of such deposit was to discourage imports. Moreover, there was no limit on the time goods stayed in port warehouses, whose storage charges were much lower than those of warehouses outside the port.

The cargo handling equipment that was used is another aspect that should be described in order to show how the ports operated between 1930 and 1970. As the detailed analysis of the study carried out by Barraza and Ayarza shows, the situation with respect to equipment may be summed up as follows:

a) *Old equipment*. The useful life of almost all the cargo handling equipment had been exceeded, and as it had not been properly maintained its operational costs were high and its performance low. This meant there was a shortage of modern equipment appropriate to meet the requirements of new technology.

b) *Too much equipment idle awaiting repairs*. Due to the chronic shortage of spare parts, the workshops of EMPORCHI were usually full of machines of different makes and models that were under repair. As a result of the shortage of spare parts, some machines had to be dismantled to be able to repair others.

c) *Inappropriate use of equipment*. One of the main reasons why equipment deteriorated rapidly was because it was improperly used in port operations. It was either used for purposes for which it had not been designed or was overloaded beyond permitted limits. It was not unusual to see packages being carried by two forklifts because the appropriate equipment was not available, or to see forklifts being used to push rail wagons or heavy packages.

d) *Lack of training in the use of equipment*. Very often, the personnel that operated equipment was not really trained to handle it. Moreover, workers were not very interested in taking care of the equipment, since they were paid per ton and usually used the equipment well beyond recommended safety limits. Consequently, there were often accidents such as crashes of forklifts, falling crane booms, overturning of cranes, and crashes of locomotives.

2. *Changes introduced prior to 1981*

Changes in the port system began to be implemented as soon as the new government took over in 1973. A corollary of the general restrictions on trade union activities throughout the country was

the banning of strikes until a new institutional structure was established for the labour sector. As a result, and because of the favourable treatment that workers received, there were no stoppages at the ports until 1981, when the trade unions opposed legislative reform.

The absence of conflicts helped to increase the efficiency of the work performed in the ports. It is difficult to gauge the exact extent to which efficiency increased, but considering that before 1973 work used to stop for various reasons for between half an hour and an hour per day for meetings, football matches, interpretation of agreements and other reasons, the gain in efficiency can estimated at between 4% and 7%. Although such an increase is considerable, it is relatively small compared to the increase in 1981. As indicated in chapter III, there was a period in which efficiency increased due to technological innovations rather than institutional changes.

Prior to the promulgation of legislation, a number of changes were made to pave the way for the participation of the private sector in port operations. First, registrations were frozen between 1974 and 1981. As the volume of cargo to be handled increased from day to day, the pressure to obtain registration continued to mount. The situation caused by differences in earnings thus became unbearable for workers who did not have access to registration.

Secondly, EMPORCHI staff begun to be reduced. Private companies were encouraged to hire some of the EMPORCHI workers and were authorized to perform dock duties in order to familiarize themselves with the organization of such work. To promote this process, EMPORCHI's equipment purchases were frozen and its existing equipment was sold; part of such equipment was bought by private companies. In June 1981, EMPORCHI stopped some of its dock services either partially or completely. Table 4 and figure 1 show the evolution of the EMPORCHI manning table. Almost all the changes in EMPORCHI were implemented with greater vigour from 1979 onwards, although the massive cutbacks of staff occurred in 1981, a few months before the core bodies of laws on institutional change were passed.

At the same time, changes were made in Customs practices. During the period between 1979 and 1981, the following laws were passed that speeded up Customs operations:

- Decree with force of law No. 3-2345: Regulations on Customs operations;
- Decree with Force of Law No. 10-2345: Auction of goods;
- Supreme Decree No. 26: Regulations with respect to transit, transshipment and rerouting of goods;
- Decree with Force of Law No. 30: Customs ordinance;
- Resolution No. 850: Guidelines on the application of the regulations on Customs operations.

These new legal provisions speeded up goods inspection formalities and administrative procedures for the payment of duties and removal of goods. The principle of good faith, i.e., the selective inspection of cargo, began to be implemented. Previously, the entire cargo was inspected, while under the new arrangement only 7% of it was inspected. The numerous forms were simplified and replaced by only one that contained all the information necessary. Computer techniques played a very useful role in this. The Central Bank discontinued its policy of requiring a deposit for imports and this helped to shorten the stay of cargo in the warehouses. Regulations were also established for the immediate clearance of goods from port areas through a procedure of prepayment of duties. This considerably simplified operations with respect to full container loads.

Table 4

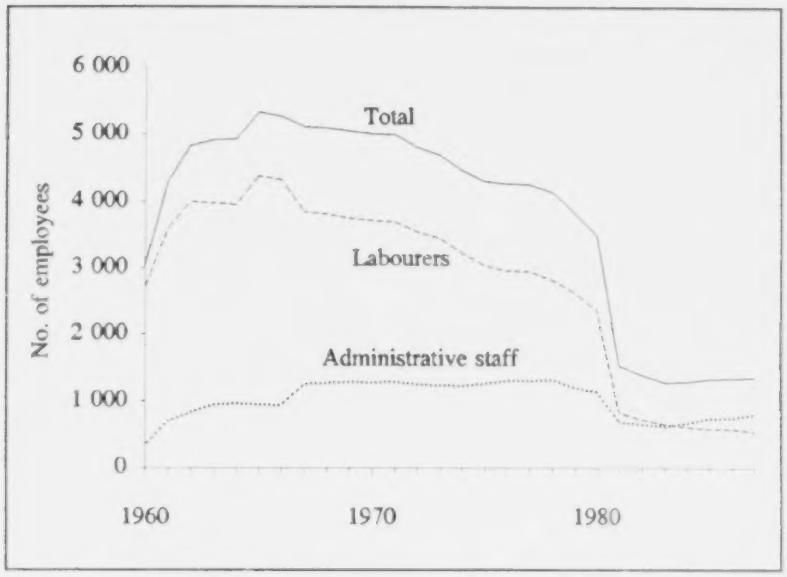
EVOLUTION OF THE EMPORCHI MANNING TABLE
(*As at 31 December of each year*)

Year	*Administrative staff*	*Labourers*	*Total*
1960	339	2 695	3 034
1961	703	3 595	4 298
1962	833	4 002	4 835
1963	944	3 983	4 927
1964	965	3 964	4 929
1965	947	4 381	5 328
1966	937	4 333	5 270
1967	1 260	3 857	5 117
1968	1 274	3 822	5 096
1969	1 296	3 758	5 054
1970	1 284	3 727	5 011
1971	1 299	3 698	4 997
1972	1 255	3 554	4 809
1973	1 246	3 455	4 701
1974	1 238	3 234	4 472
1975	1 266	3 040	4 306
1976	1 309	2 966	4 275
1977	1 312	2 950	4 262
1978	1 326	2 826	4 152
1979	1 209	2 635	3 844
1980	1 139	2 354	3 493
1981	696	836	1 532
1982	666	730	1 396
1983	626	663	1 289
1984	682	615	1 297
1985	748	591	1 339
1986	754	593	1 347
1987	813	545	1 358

Source: Chilean Port Corporation (EMPORCHI).

Figure 1

EVOLUTION OF THE EMPORCHI MANNING TABLE
(*As at 31 December of each year*)



Source: Chilean Port Corporation (EMPORCHI).

At the same time as the foregoing, a system of storage charges began to be designed which would discourage people from keeping cargo at the ports for a long time. That policy was finalized in the new rate structure which was established in 1981.

C. THE NEW SYSTEM SINCE 1981

The basic legislation of the new port system is contained in Law No. 18 032 published on 25 September 1981, and Law No. 18 042 published on 15 October 1981. Law No. 18 032 abolished the system of registration for maritime workers' unions and authorized any worker who met the minimum requirements of physical fitness to work in the ports on board vessels and on the docks. Such people were issued a Port Worker's Permit (PTP).

Under that law, workers can establish trade unions as well as professional associations or federations, but only the specific unions in each company are authorized to hold negotiations. In other words, the entire shipping sector was subject to the provisions of the labour plan established for the rest of the economy.

Law No. 18 042 abolished the monopoly that EMPORCHI had enjoyed over dock work—i.e., the area between crane hook and warehouse—and authorized the private sector to carry out

such work. The other articles of that law on the establishment of private port companies and concessions have yet to be applied.

Almost at the same time as the above-mentioned laws came into force, two resolutions were adopted that achieved the effect the government had been looking for. On 1 October 1981, the Department of Coastal Waters and the Merchant Marine (DIRECTEMAR) promulgated resolution No. 12 600/398, which establishes that all ports in Chile should have three 7.5 hour shifts of work per day. The shifts were from 8 a.m. until 3:30 p.m., from 3:30 p.m. until 11 p.m. and from 11 p.m. until 6:30 a.m.

On 15 December 1981, the EMPORCHI system of port charges was considerably modified. The new system is considerably simpler than the old one and stresses efficiency in the use of infrastructure. For example, ship turnaround costs are now charged according to total vessel length. Consequently, ships stay for as short a time as possible at their berths. As the port areas were the most expensive in the city, storage rates were increased to encourage users to remove their cargo from the port and not to leave them stored in warehouses.

The National Customs Service has continued to pass resolutions that expedite Customs formalities and the payment of duties. Since 1981, the following major bodies of law have been promulgated:

- Resolution No. 1 148 of 29 March 1985, which introduced a new import declaration form that permitted the complete computerization of the system;
- Resolution No. 2 400 of 1 July 1985, which brought into force the compendium of Customs regulations;
- Resolution 1 654 of 3 May 1985, which approved a tax assessment and proof of payment form that consolidated six previous forms into one and made possible its incorporation into computer systems;
- Supreme Decree No. 224 of 28 June 1986, which approved special measures on the storage by private parties of inputs to be used in products for export;
- Supreme Decree No. 845 of 29 January 1987, which established regulations with respect to free competition on the basis of bids between private warehouse operators authorized by the National Customs Service to set up storage facilities outside the primary port zone.

As a result of all these institutional changes, Chilean ports have started operating with a measure of efficiency; they have even attained unprecedented figures at the world level in cargos such as fruit and cellulose and, as a result, plans for investments in expensive port works have been postponed.

Chapter III

EVOLUTION OF PORT EFFICIENCY, COSTS AND CAPACITY

The changes that were made in the port system improved the efficiency of port operations and reduced their costs. This chapter examines developments in port efficiency, operating costs and the estimated capacity of the port system. The analysis focuses basically on what happened at ports in the Fifth and Eighth Regions, Chile's largest in terms of tonnage and value of products handled.

A. EVOLUTION OF PORT EFFICIENCY

Although the institutional changes have had a significant impact on port efficiency, it should be noted that other factors such as the steady trend towards technological innovation, and other institutional changes that occurred in the country such as export promotion, also boosted port efficiency.

The concept of efficiency in port operations generally refers to the time it takes any given type of cargo to pass through port facilities, i.e., the time it takes to transfer it from the ship to shore and *vice versa*. There are other indicators which are related to the time the cargo spends in warehouses, and these are used to measure warehouse efficiency. The performance of the remaining port operations is subordinate to that of transfer, since wharves, moles and cranes are the most expensive inputs of the port system, especially in Chile, where their cost is very high indeed. The efficiency of transfer varies depending on factors such as the type of cargo, technology used, place of transfer, type of vessel and labour practices.

The units usually used to measure the efficiency of cargo transfer are tonnage transferred per hour and per hatch, and the tonnage transferred per hour of ship's time in berth or per hour of work actually performed. The tonnage transferred in a year per metre of berth length was also registered as a means of measuring port efficiency. In the tables and figures related to this subject, those units that facilitate the analysis of the efficiency of transfer operations in the past have been used, since data in this respect are not easy to collect.

In table 5 and figure 2, indications are given concerning the tonnages transferred through the ports of Valparaiso and San Antonio in the Fifth Region and of Talcahuano and San Vicente in the Eighth Region, virtually from the time they were built. The data clearly show the consequences of the economic crises of 1930, 1975 and 1982 on port activities and, in the particular case of San Antonio, the impact of the earthquake of 3 March 1985, which destroyed three of the seven berths that existed at the time and seriously damaged two others. They also show the impact had by the construction of the port of San Antonio at the beginning of the century on the movement of cargo in Valparaiso.

Table 5

PORTS OF VALPARAISO, SAN ANTONIO AND TALCAHUANO/SAN VICENTE: CARGO HANDLED, 1907 TO 1988
(*Tons*)

Year	*Valparaiso*	*San Antonio*	*Subtotal*	*Talcahuano and San Vicente*
1907	1 516 069	3 701	1 519 770	-
1908	1 360 341	5 167	1 365 508	-
1909	1 333 920	5 522	1 339 442	-
1910	1 483 567	2 968	1 486 535	-
1911	1 521 012	-	1 521 012	-
1912	1 651 741	2 022	1 653 763	-
1913	1 650 815	4 340	1 655 155	-
1914	1 281 639	10 993	1 292 632	-
1915	1 300 148	34 449	1 334 597	-
1916	1 285 148	68 895	1 354 043	-
1917	1 241 506	68 859	1 310 365	-
1918	1 212 543	135 001	1 347 544	-
1919	1 161 060	124 367	1 285 427	-
1920	1 232 336	138 793	1 371 129	-
1921	1 094 370	261 305	1 355 675	-
1922	999 791	342 268	1 342 059	-
1923	1 083 616	468 884	1 552 500	-
1924	1 148 707	652 388	1 801 095	-
1925	958 607	702 724	1 661 331	-
1926	913 783	726 106	1 639 889	-
1927	808 353	659 914	1 468 267	-
1928	875 407	627 891	1 503 298	-
1929	1 057 949	750 528	1 808 477	-
1930	944 357	740 089	1 684 446	-
1931	713 887	549 164	1 263 051	-
1932	547 601	374 774	922 375	-
1933	688 695	474 743	1 163 438	-
1934	834 142	706 467	1 540 609	-
1935	935 424	752 825	1 688 249	-
1936	986 674	735 665	1 722 339	-
1937	1 066 850	902 079	1 968 929	-
1938	1 203 747	863 141	2 066 888	-
1939	1 166 906	781 551	1 948 457	-
1940	1 310 493	782 758	2 093 251	-
1941	1 124 874	743 184	1 868 058	-
1942	1 257 989	745 966	2 003 955	-
1943	1 159 018	704 053	1 863 071	-
1944	1 279 896	740 715	2 020 611	-
1945	1 222 168	739 040	1 961 208	-

(continues)

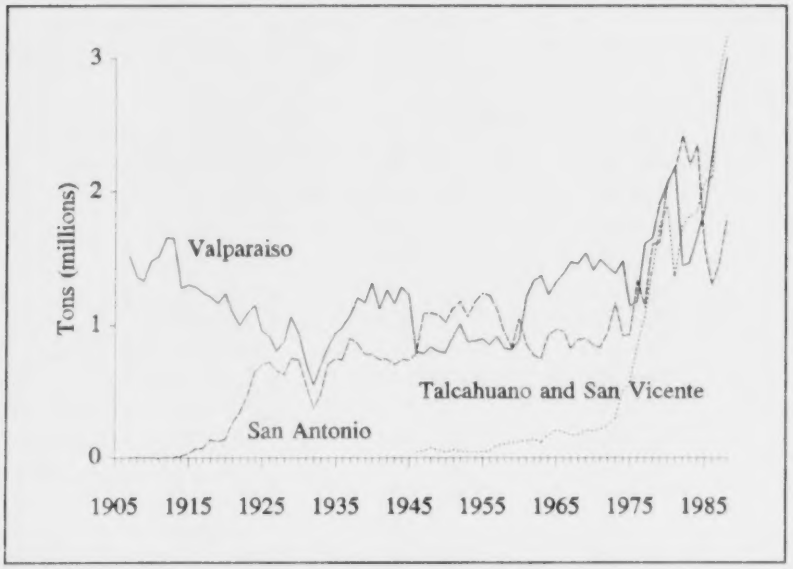
Table 5 (conclusion)

Year	*Valparaiso*	*San Antonio*	*Subtotal*	*Talcahuano and San Vicente*
1946	801 867	786 008	1 587 875	44 771
1947	786 661	1 089 163	1 875 824	57 733
1948	835 788	1 088 035	1 923 823	77 561
1949	803 818	1 075 298	1 879 116	56 480
1950	795 774	1 021 159	1 816 933	43 847
1951	916 792	1 127 541	2 044 333	58 850
1952	1 008 405	1 173 886	2 182 291	48 044
1953	875 885	1 057 927	1 933 812	46 130
1954	881 014	1 172 265	2 053 279	42 590
1955	900 098	1 235 403	2 135 501	48 203
1956	849 680	1 219 883	2 069 563	53 275
1957	916 517	1 114 181	2 030 698	96 161
1958	822 500	942 774	1 765 274	104 419
1959	819 471	834 664	1 654 135	113 089
1960	887 343	1 047 371	1 934 714	127 029
1961	1 210 516	855 573	2 066 089	127 198
1962	1 335 003	771 889	2 106 892	141 274
1963	1 366 010	746 241	2 112 251	113 496
1964	1 227 634	930 389	2 158 023	172 428
1965	1 319 853	971 285	2 291 138	206 096
1966	1 383 881	955 201	2 339 082	193 704
1967	1 470 760	822 868	2 293 628	173 122
1968	1 463 522	894 162	2 357 684	174 038
1969	1 536 197	901 828	2 438 025	209 916
1970	1 408 468	848 993	2 257 461	201 643
1971	1 488 319	833 526	2 321 845	218 406
1972	1 430 103	942 277	2 372 380	243 155
1973	1 382 958	1 168 650	2 551 608	296 329
1974	1 479 208	919 948	2 399 156	501 422
1975	1 147 571	933 852	2 081 423	560 084
1976	1 181 667	1 335 530	2 517 197	848 827
1977	1 615 845	1 136 752	2 752 597	1 066 021
1978	1 658 163	1 608 557	3 266 720	1 411 885
1979	1 914 365	1 624 444	3 538 809	1 744 502
1980	2 059 729	2 080 667	4 140 396	1 891 478
1981	2 188 793	2 169 178	4 357 971	1 352 766
1982	1 450 207	2 415 449	3 865 656	1 749 503
1983	1 465 904	2 193 948	3 659 852	1 813 276
1984	1 664 730	2 343 332	4 008 062	1 858 478
1985	1 860 016	1 580 958	3 440 974	2 079 744
1986	2 283 478	1 303 936	3 587 414	2 115 487
1987	2 705 164	1 453 125	4 158 289	2 892 196
1988	3 003 545	1 794 573	4 798 118	3 163 969

Source: Chilean Port Corporation (EMPORCHI).

Figure 2

PORTS OF VALPARAISO, SAN ANTONIO AND TALCAHUANO/
SAN VICENTE: CARGO HANDLED, 1907 TO 1988



Source: Chilean Port Corporation (EMPORCHI).

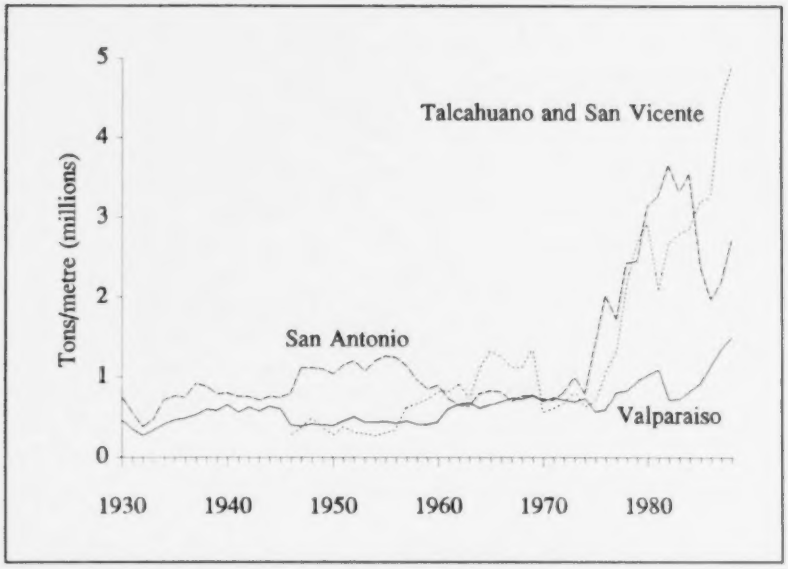
Another notable feature shown by figure 2 is that, in the past, the number of tons of cargo transferred in the ports of the Fifth and Eighth Regions grew very slowly. In the case of Valparaiso and San Antonio, the tonnage transferred increased by about one million tons in 70 years, to 2.5 million tons in 1972. Following the open-door external trade policy applied by the government that came into power in 1973, the amount of cargo handled increased considerably, with about 4.8 million tons moved in Valparaiso and San Antonio and 3.2 million tons in Talcahuano and San Vicente in 1988.

The total length of the Valparaiso berths has not changed since the port was built. In San Antonio, on the other hand, some construction has taken place. In 1960, fills were made on what are now berths 6 and 7; in 1975, the bulkheads of what are now berths 4 and 5 were changed.[4] At the port of Talcahuano, the first berth (155 metres) became operational in 1946, and the second (205 metres) in 1970. However, in 1978 the first was abandoned because its sheet piling was cut. The two berths at San Vicente (443 metres in length) became operational in 1974.

Figure 3 shows the amount of cargo transferred annually per metre of berth available in the ports of Valparaiso, San Antonio, Talcahuano and San Vicente. The data show that, prior to 1975, the increase in the amount of cargo transferred was extremely low and even negative in some cases. However, as soon as the country was opened up to international trade in 1975, there was a clear increase in the throughput of the berths which existed at that time. All of this occurred before the institutional reforms of 1981. Since then, much higher throughputs have been achieved, notwithstanding the fact that virtually nothing has been invested in ports since 1975.

Figure 3

PORTS OF VALPARAISO, SAN ANTONIO AND TALCAHUANO/
SAN VICENTE: BERTH THROUGHPUT, 1930 TO 1988



Source: Chilean Port Corporation (EMPORCHI).

Chile's ports have gone through three phases of profound change. The first occurred in the years prior to 1975 and led to an increase in port productivity as a result of changes in technology. The second occurred between 1975 and 1980, and the increase in productivity which took place in that period was the fruit of restructuring the country's macroeconomic policies. The third and final phase began in 1981 with the adoption of a new legal system that radically transformed the institutional structure of the country's ports. Each one of these phases has been equally important, and the first two sets of changes laid the foundation for changing the institutional structure of the ports in 1981.

Before cargo consolidation units such as containers and pallets began to be used in Chile's maritime trade, port work was labour intensive in addition to being costly, inefficient and hazardous for the cargo itself. The technological advances that changed this situation and increased productivity in the years before 1975 consisted neither in building specialized terminals nor in acquiring special cranes, but rather in accepting and judiciously utilizing cargo consolidation units. The example of fresh fruit exports will be used to illustrate the foregoing. Initially, fruit cargo operations consisted of handling individual boxes of fruit; this evolved later into the handling of pallets which carried many boxes and finally, from 1981 onwards, a progressively larger number of pallets arranged in cages were handled simultaneously. Apart from the demolition of warehouses to create open-air storage space for containers, no other structural changes were made at Chilean ports until 1984, when a private shipping line installed a multipurpose crane for its port activities.

As a result of the increases in oil prices from 1973 onwards, there was a considerable transfer of funds from oil-importing countries to oil-exporting countries. Chile's economic climate at that time was characterized by considerable growth and good opportunities for investment projects. The funds for financing such projects came from petrodollars deposited in international banks, and Chile's external debt increased rapidly between 1975 and 1980. The debt was difficult to service as a result of its size and high rates of interest; however, this difficulty was partly offset by export-oriented macroeconomic policies established by the government in 1975 and by the fact that the prices of many of Chile's export products increased at the same time as oil prices. This policy of openness to the external market led to an increase in the types, volume and value of exports.

In the ports, the period 1975-1980 was very unusual in that cargo consolidation technologies were used to handle most of the increasing volume of goods in a labour-intensive environment with only two shifts of workers a day.

In tables 6 and 7, a comparison is made of berth throughputs in the ports of Valparaiso and San Antonio. The tables also show the average occupancy of each berth, i.e., the number of hours that it was occupied in relation to the total number of hours it was available for the performance of work. An analysis of the tables shows that the performance per metre of berth—and hence efficiency of transfer—has been increasing year by year, while the average period of occupancy has been decreasing. This decrease is attributable to the increase in the number of hours work can be performed as a result of longer working days and greater efficiency.

In Valparaiso, there are some berths which in 1967 showed an average rate of occupancy of about 73% (according to international standards, this index means the beginning of congestion); 20 years later, without any fresh investments in infrastructure, they show occupation of 59% and more than double the volume of cargo transferred. As a result of the 1981 reforms, work at the ports began to be done in three 7.5 hour shifts—i.e., nearly 24 hours a day—while formerly an average of only 11 hours of work were done a day. The new method eliminated time wasted by the constant opening and closing of hatches and so on.

When the performance as regards specific cargoes is analyzed, roughly the same trend may be seen as that described above. In table 8, an estimate of performance expressed in tons per hour per hatchway is given for selected products. The figures were taken from studies carried out in the years indicated, information provided by the Chamber of Shipping and EMPORCHI, and interviews with some important shippers.

It should be noted that the fi res in table 8 correspond to averages for the products shown, since it is well known that the performance achieved on specific vessels or at specific berths depends on the equipment used and the degree of specialization of the men who operate it. Thus, for example, in the case of fruit shipped from Valparaiso, the performance achieved varied according to whether the crane was operated from the vessel or from the wharf (a crane's speed of operation is different in the two areas) or whether work was done using a platform, cage or straps. The trend reflected in table 8 is unmistakable: over the past 10 years an increase has been recorded in performance which in some cases has virtually tripled since 1975. The following paragraphs describe some of the special factors that brought about such increases.

Table 6

PORT OF VALPARAISO: COMPARISONS OF BERTH THROUGHPUT AND OCCUPANCY

Berth	*Length*	*Tons*		*Tons per metre*		*Occupancy (%)*[a]	
		1967	*1986*	*1967*	*1986*	*1967*	*1986*
S1	175	197 230	347 001	1 127	1 983	73	...
S2	175	144 298	372 539	825	2 129	71	59
S3	260	127 134	381 375	489	1 467	73	...
S4	200	263 828	679 517	723	1 862	51	39
S5	165	...	...	...	...	...	...
S6	245	...	...	...	...	...	...
S7	120	268 480	410 529	444	679	56	43
S8	240	...	...	...	...	...	...
S9[b]	220	450 380	57 673	2 047	262	65	11
S10	205	4 000	...	20	...	...	...
TOTAL	2 005	1 455 350	2 248 634	726	1 122	65	40

Source:

1967: Guillermo Barraza A. and Hernán Ayarza E., *Situación portuaria de las provincias del Norte Chico. Puertos de Coquimbo, Valparaíso y San Antonio*, Vol. II, publication No. 39 of the Department of Planning and Urbanism, Ministry of Public Works, Santiago, Chile, 1968.

1986: Louis Berger International, Inc.-INECON Ltda., *Plan de desarrollo portuario V Región y factibilidad 1ª etapa*, Ministry of Transport and Telecommunications, June 1988.

[a]Berths are assumed to have been available for work 11 hours a day prior to 1981 and 22.5 hours a day after 1981.

Note: There was formerly a mechanized plant on Baron Pier for unloading coal.

Table 7

PORT OF SAN ANTONIO: COMPARISON OF BERTH THROUGHPUT AND OCCUPANCY

Berth	*Length*	*Tons*			*Tons per metre*			*Occupancy (%)*[a]		
	(m)	*1966*	*1980*	*1986*[c]	*1966*	*1980*	*1986*	*1966*	*1980*	*1986*
S1[b]	226	...	1 094 392	69 050	...	4 842	...	50	66	-
S2[b]	226	...	351 062	39 599	...	1 553	...	66	41	-
S3[c]	150	...	...	...	...	...	...	70	...	-
Subtotal	602	623 718	1 445 454	108 649	1 036	3 198	...	62	54	-
S4	383	...	78 918	448 919	...	...	...	63	21	38
S5	...	...	164 525	332 014	...	636	2 039	44	28	35
S6	200	...	278 408	196 702	...	1 392	984	59	48	22
S7	120	...	50 860	202 690	...	424	1 689	35	3	29
Subtotal	703	325 552	572 711	1 180 325	463	815	1 679	50	25	31
TOTAL	1 305	949 270	2 018 165	1 288 974	727	1 747	1 834	56	40	31

Source:

1967: Guillermo Barraza A. and Hernán Ayarza E., *Situación portuaria de las provincias del Norte Chico. Puertos de Coquimbo, Valparaíso y San Antonio*, Vol. II, publication No. 39 of the Department of Planning and Urbanism, Ministry of Public Works, Santiago, Chile, 1968.

1980: Administration of the Port of San Antonio.

1986: Louis Berger International Inc.-INECON Ltda., *Plan de desarrollo portuario V Región y factibilidad 1ª etapa*, Ministry of Transport and Telecommunications, June 1988.

[a]In calculating the totals, the simple average occupancy of existing berths was used. Berths were assumed to have been available 11 hours a day prior to 1981 and 22.5 hours a day after 1981.

[b]Berths 1 and 2 collapsed in the earthquake of 3 March 1985. The tonnages indicated for 1986 refer to bulk liquid cargo transferred with temporary facilities.

[c]Berth 3 was under repair during the period covered, and was seriously damaged in the earthquake of 3 March 1985.

Table 8

ESTIMATED EVOLUTION OF OUTPUTS
(*Tons per hour per hatchway*)

Product	*Port*	*1955*	*1960*	*1965*	*1970*	*1975*	*1980*	*1985*
Copper bars	San Antonio	30	34	...	50	70	80[a]	100[b]
Fruits	Valparaíso	...	...	...	...	14	20[c]	30[d]
Break-bulk cargo	Valparaíso	...	16[b]	...	...	15	30[e]	35[f]
Containerized break-bulk cargo	Valparaíso	...	...	...	...	...	73[e]	140[e]
Fish meal	Iquique	...	...	...	...	...	18[e]	21[e]
Sawn wood	San Vicente	...	...	...	...	10	22	33
Round logs	San Vicente	...	...	...	...	12	27	40

Source: Chilean Copper Corporation (CODELCO-Chile), Shipping Department; University of Chile, Institute of Economics, *Eficiencia portuaria en Chile*, Santiago, Chile, 1960; Instituto de Análisis de Sistemas Aplicados para el Desarrollo (IASA), *Estudio de las alternativas portuarias de la región central. Cuarta etapa. Requerimientos de infraestructura para las distintas alternativas*, Regional Intendance, Fifth Region, Regional Planning Secretariat, Santiago, Chile, 1978; Catholic University of Chile, Inter-American Course on Project Preparation and Evaluation (CIAPEP), *Ampliación del puerto de San Vicente*, 1978; INECON Consultores Ltda., *Análisis y planificación de la infraestructura MOP VIII Región, 1981-1990*, Ministry of Public Works, 1979; INECON Ltda., *Ampliación de la capacidad portuaria VIII Región*, 1987; Celulosa Constitución Ltda. (CELCO), Traffic Division.

[a]Average between data from CODELCO-Chile; the Chilean Chamber of Shipping; and EMPORCHI, *Manual de rendimientos*, 1980.

[b]Average between data from CODELCO-Chile; the Chilean Chamber of Shipping; EMPORCHI, *op. cit.*; and Louis Berger International, Inc.-INECON Ltda., *Plan de desarrollo portuario V Región y factibilidad 1ª etapa*, Ministry of Transport and Telecommunications, June 1988.

[c]Average between data from EMPORCHI and the Chilean Chamber of Shipping.

[d]Average between data from EMPORCHI, the Chilean Chamber of Shipping, and Louis Berger International, Inc.-INECON Ltda., *op. cit.*

[e]EMPORCHI, *Manual de rendimientos* de 1980 and 1985, and conversations with administrators of the Corporation.

[f]Average between data of EMPORCHI, *Manual de rendimuentos*, 1985; and Louis Berger International, Inc.-INECON Ltda., *op. cit.*

Copper is quite an important product in throughput and for the country. The form in which copper is shipped varies according to its purity and to the trade policy of the Chilean Copper Corporation (CODELCO-Chile). There are cakes, bars and cathodes. Performance with respect to the handling of copper bars, the product included in table 8, depends basically on the type of lifting equipment used in the operation. With the passage of time, it has been possible to use lifting equipment with ever greater capacity that permits the use of larger slings, so that today, under favourable conditions, outputs of up to about 400 tons per hour per hatch can be obtained with an average of 100 tons per hour per hatch. However, as far as the occupation of the labour force was concerned, an event of capital importance occurred in 1975-1976. Copper began to arrive at the ports prestrapped. Prior to that, copper bars used to be strapped at the port itself. The new measure substantially reduced the loading time and consequently reduced the time vessels spent in port. However, as will be seen later on, the number of workers used on each hatch did not change much due to the fact that the composition of the gangs had been established by an arbitrator in 1944. Year after year, the composition of gangs remained unchanged in the agreements with maritime unions, in line with previous operational practices.

Shipments of the forest industry are another interesting case. From the beginning of the forest industry until the year 1976-1977, exports of products such as sawn wood and logs were shipped mainly to neighboring countries such as Argentina and Brazil in relatively small vessels. Today, as the export market has expanded, larger and more sophisticated vessels can be used. Moreover, a substantial amount of specialized equipment for dock operations—tong cranes, for example—has been incorporated, and workers have been trained to use it; now there are real specialists who are very quick and accurate in operating machinery in the ports of the Eighth Region.

The most important technological innovation—the unitization of cargo in containers—occurred in the area of break-bulk cargo. The introduction of this technology has led to a significant improvement in the handling of such cargo. Break-bulk cargo, which used to be transferred at a rate of 15 to 20 tons per hour per hatchway, can now be transferred at a rate which, under favourable conditions, may come close to 200 tons per hour per hatchway. In other words, performance has increased over tenfold. Containerization is, however, a capital-intensive technology. Shipping companies have had to invest in larger and more specialized vessels (container ships), stevedoring companies have had to invest in specialized handling and carrying equipment, and the number of persons employed per ton has decreased sharply. Nevertheless, what was said earlier with respect to agreements on the size of teams also applies in this case.

B. EVOLUTION OF PORT COSTS

There are various concepts of port costs, depending on who pays them. The two most common concepts are costs to the user and the cost of resources used in the system. There is a whole process of identification involved in determining port costs, which could become very complicated because, as the agents involved in port operations have dealings with each other, expenses for some could be income for others.

User costs are those which must be borne by shippers when they transfer their cargo through a port. They comprise the fees paid to shipowners and to EMPORCHI, or to private stevedoring companies if EMPORCHI does not carry out the operation. As will be seen later, however, there

could be some distortions in the use of this concept, since specific cargoes or ports might be subsidized. Such subsidies hide the real impact that institutional changes in the ports could have on costs.

The second concept is that of use of the resources required for a specific port operation and refers to the number of worker-hours, machine-hours, ship-hours, etc. employed. Such resources are valued at market prices or assessed in line with the provisions of the agreements with maritime unions (before 1981). This cost concept reflects the real cost to the port system and the country of transferring a specific cargo through a port. In this chapter both types of costs have been estimated, but greater emphasis has been put on resource costs.

The measurement of costs in the past is an extremely complicated problem, since in most cases information either does not exist or is not suitable to the purposes of this study. Formerly, EMPORCHI did not perform cost accounting, and this makes it virtually impossible to differentiate between the costs of the various operations that were carried out. Apart from the fact that information on costs in the past is either not available or incomplete, the problem of fluctuations in the value of money over the years due to changes in exchange rate policy and to inflation—which was over two digits in the period 1972-1975—had to be dealt with.

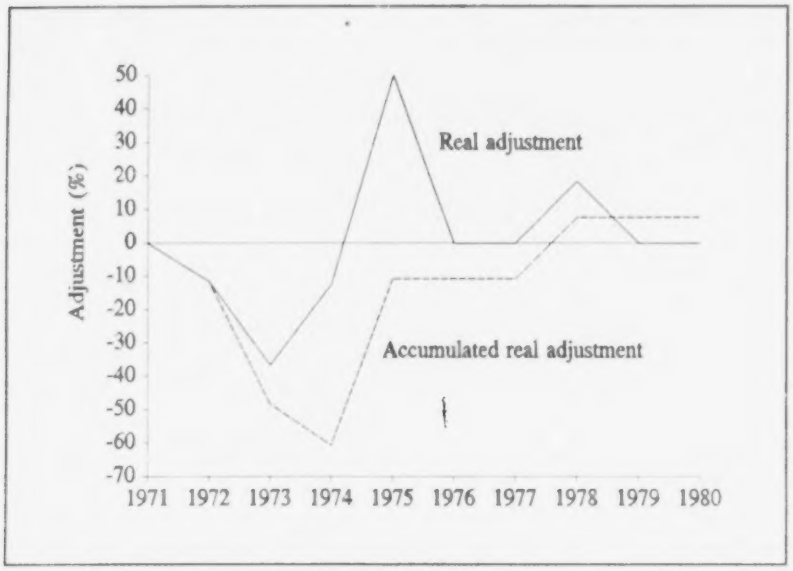
For these reasons, for the purpose of this study, it was decided to make an estimate of the former costs with regard to selected products in given years on the basis of the quantity of resources used in passing through ports. For each product and year, calculations were made of the worker-hours used, the number of hours during which equipment was used, the number of hours each vessel remained in port, the use of infrastructure, and so on. Such calculations were made for five products loaded onto certain ships in 1970, 1975, 1980 and 1986. Only the operational practices differed from case to case.

After the physical quantities of the resources used had been calculated, various methods were applied to value them, depending on their nature. First, the worker-hours value of each member of the labour crew on board the vessels concerned in 1980 and 1986 was calculated. The consumer price index was used to express 1980 values in terms of 1986 prices. In order to obtain 1970 and 1975 values, it was necessary to study the adjustment of the real remunerations paid to members of the maritime unions in that period. To do that, all the decrees and agreements relating to adjustment for the period 1970-1980 were compiled. In figure 4, the pattern of real adjustments obtained by the unions is shown. From this figure it may be observed that during the period 1971-1974, which spans the Popular Unity government and the first year of the military government, the trade unions lost up to 60% of their 1970 purchasing power; in other words, the adjustments were not enough to compensate for the increase in inflation over those years.

On 9 April 1975, following a study on rationalization carried out by the Department of Territorial Waters and the Merchant Marine, new rates were set, and it was agreed to pay compensation of 45% for losses suffered as a result of the rationalization exercise. On the same occasion, a contribution of 5% for a housing fund was also established. The compensation and the housing fund would be the shipowner's responsibility. At the same time, by virtue of Decree-Law No. 670 of 1 October 1974, the government ordered that public and private-sector remunerations should be adjusted periodically in line with the consumer price index. That decree was applied to the maritime sector until 6 August 1981, 17 days before the promulgation of Law 18 032, which completely modified port labour legislation.

Figure 4

EVOLUTION OF THE REAL ADJUSTMENTS TO REMUNERATIONS OBTAINED BY THE MARITIME UNIONS



Source: Chilean Chamber of Shipping.

The second real adjustment obtained by the unions was the one established under the agreement entered into by Tripartite Commission No. 1 on 30 October 1978. In this agreement, an increase of 18.5% was provided in addition to the adjustments stipulated under Decree-Law 670. The agreement, whose initial duration was for one year, was extended twice until the new institutional arrangements came into force in 1981. Consequently, in 1978 remunerations returned to the level to which they had risen in 1970 and even surpassed it slightly.

Although the remuneration paid to the manpower supplied by EMPORCHI was lower than that paid to members of maritime unions, for the purposes of estimating costs for this study it was assumed they were the same for both groups. This was done so that some of EMPORCHI's other administrative costs could be taken into account.

Machinery was assigned a rental value equal to that prevailing in the market in 1986. The same criterion was used for ships, except that only their time at berth was taken into consideration, because formerly no statistics were kept regarding the time they may have had to wait for berth space to become available. Only in the case of the Eighth Region is there some information on waiting time. In 1978, as part of the Inter-American Course on Project Preparation and Evaluation (CIAPEP), the Catholic University of Chile carried out a study on San Vicente and Talcahuano which established that, in 1977, 338 ships had waited a total of 233 days or an average of 0.69 days each, equivalent to occupancy rates of 93% and 88%, respectively.[5] In due course, regular statistics

became available in respect of waiting time at the ports of San Vicente and Talcahuano, and the figures for the last few years are as follows:

Year	*Waiting time (days)*	*Number of ships*	*Avg. wait (days/ship)*	*Occupancy (%) San Vicente*	*Talcahuano*
1985	400	305	1.31	89	70
1986	395	299	1.32	80	74
1988	522	297	1.76	...	...

If the data published in connection with the study conducted by the Catholic University are compared with the information for 1986, it may be seen that in 1977 and 1986 there were indications of congestion despite the fact that the systems of work operational in the two periods were different. Unfortunately, figures of this kind are not available on the other ports for the years taken into account in the cost estimates.

In the case of infrastructure, the hourly value assigned was designed to approximately reflect the scarcity cost. For this purpose, the rates effective in 1986 were applied on the assumption that they had been based of this type of concept. A profit of 10% was assumed for EMPORCHI. In fact, over the past seven years, EMPORCHI has made pre-tax profits of 4% to 6% on its capital.

In calculating costs, account was taken of the following products along with the vessels and freight volumes indicated, the data used having been taken from a document prepared by the Chilean Chamber of Shipping:

Product	*Vessel*	*Shipment*
Fruit (apples)	Bora Universal	200 676 boxes
Copper bars	Czacki	2 400 t
Fish meal in sacks	Hydrohos	7 150 t
Sawn timber	Stove Transport	34 915 m^3
Logs	Stove Transport	34 915 m^3

Table 9 summarizes the costs of resources used in port operations. A detailed calculation of these costs can be found in annex 1, which clearly shows that they fell more slowly before 1981 and that, after the new port regulations had been promulgated, they decreased substantially, not only as a result of the decrease in the costs themselves and in the quantity of manpower employed, but also because of the increase in productivity that made it possible to realize savings in respect of reduced waiting time for berth space and of increased berth occupancy. In the case of forest products, it would appear that the drop in costs prior to 1981 was to a considerable extent attributable to the opening up to international trade, which made it possible to use better handling and shipping technologies as a result of the greater volumes of cargo moved.

Table 9

SUMMARY OF COST OF RESOURCES USED IN PORT OPERATIONS
(*1986 U.S. dollars*)

Product	*Unit*	*1970*	*1975*	*1980*	*1986*
Fruit	Dollars/case	0.73	0.72	0.54	0.26
Copper bars	Dollars/ton	10.71	9.13	7.01	4.36
Fish meal in sacks	Dollars/ton	16.17	15.32	14.62	8.44
Sawn timber	Dollars/m^3	15.70	15.19	7.80	3.35
Logs	Dollars/m^3	13.28	12.84	6.47	3.11

Source: Ingenieros y Economistas Consultores Ltda. (INECON).

All the foregoing meant considerable savings in costs for the port system, which are assumed to have been passed on to the shippers. However, given the complex rate structures applied by EMPORCHI and the shipowners before 1981, the transfer of benefits is not altogether clear. Prior to 1981, EMPORCHI's rate structure (Resolution No. 174 of 9 March 1977) made provision for levying charges in respect of time waiting for berth space, work teams on shore, handling, storage and additional movements of cargo. The bulk of income came from the movement of cargo; discounts of 60% were given to coastal and export cargoes (except copper), while full rates were charged for each type of imported cargo or product. Since EMPORCHI had to be self-financing, the effect was that import cargo charges were used to subsidize export and coastal cargo charges.

In table 10, an estimate is given of the distribution of savings among certain agents of the port system as a result of the institutional change made in the port system, based on a comparison of the resources employed in 1980 and 1986.

In annex 2, the calculations made are shown in detail. For those purposes the income of EMPORCHI was calculated on the basis of the different rate systems in use in 1980 and 1986, and the origin of the various types of costs was identified. Under the old system, EMPORCHI charged shipping companies for waiting time and for work teams, and the user for handling and storage. From 1981 onwards, following the rate reforms, it has been charging shipowners for waiting time and transfer of cargo, and users for storage. Under the current system, no distinction is drawn between products, and the same rates are charged for a ton of imports as for a ton of exports; the only distinction made is between break-bulk and bulk cargo. Furthermore, it was assumed that the profits earned by shipping companies did not vary when the system changed; in other words, it was assumed that the companies passed the benefits obtained on to the users. Thus, in making these calculations, the monopolistic practices of liner conferences were not taken into account. The effect of those practices is lessened in the case of the products referred to, since most of these are shipped in chartered vessels, i.e., under free in and out (FIO) fixtures. In fact, the products examined account for 40% of the total tonnage handled through EMPORCHI ports in 1988.

Table 10

ESTIMATE OF DISTRIBUTION OF SAVINGS FOLLOWING CHANGES INTRODUCED INTO THE PORT SYSTEM

Product	*Unit*	*Savings*[a]		
		Cargo owner or shipowner	*EMPORCHI*	*Total*
Fruit	US$/box	0.14	0.14	0.28
Copper bars	US$/ton	6.70	-4.05	2.66
Fish meal in sacks	US$/ton	4.61	1.57	6.18
Sawn wood	US$/$m^3$	2.81	1.63	4.44
Logs	US$/$m^3$	2.73	0.63	3.36
Imported break-bulk cargo	US$/ton	3.55	3.22	6.77

Source: Ingenieros y Economistas Consultores Ltda. (INECON).
[a]Negative sign indicates loss.

The other major factor which helps to ensure that benefits are actually passed on to users is free competition among stevedoring companies. For instance, an operating arrangement has recently come into being whereby a third party handles part of a vessel's cargo on behalf of a specific user. It should be borne in mind that in a vessel sailing under f.i.o. charter there may be goods for a number of different consignees, each with a separate stevedoring company if necessary.

In the case of liner vessels, liner terms usually stipulate that the shipowner should deliver the cargo on the wharf and that the consignee is responsible for transferring it to and from the port warehouse. For effecting that transfer, the consignee designates a stevedoring company which may be either the same one hired by the shipowner to unload the vessel, or another—i.e., a third carrier. Recently, however, shipowners have been offering contracts of affreightment which include transfer of the cargo to the warehouse (full liner terms). If the consignee indicates a preference for a contract stipulating delivery of the cargo on the wharf rather than at the warehouse, the rate quoted by the shipowner makes no provision for a discount in order to permit the hiring of a third carrier without increasing the total cost. The consignee is thus forced to accept a contract covering full service to the warehouse. It is clear that shipowners would prefer their vessels to be unloaded by one company only, but shipowners also own stevedoring companies, the manner in which they set their rates restricts access by other stevedoring companies to port operations, thereby reducing competition and limiting the extent to which benefits derived from reforms are passed on to users.

It is not clear how the benefits derived from the changes introduced into the port system have been distributed to users. In some cases, EMPORCHI greatly increased its profits by removing subsidies on export products, decreasing its direct expenditures, and increasing storage charges, which have a considerable impact on the prices of imports. In the case of copper, EMPORCHI suffered losses that were higher than the benefits derived from the change in the system, but in the case of fish meal in sacks and fruit, it kept part of the savings.

In annex 2, an estimate is made of the savings made with respect to a shipment of goods imported in sacks, 70% of which were unloaded indirectly. These goods were stored for an average of 20 days prior to 1981 but for only 12 days in 1985, when substantially increased storage charges led to a reduction in the time spent in port warehouses. The distribution of benefits in this case shows that about two-thirds of the cost reductions were transferred to the user, while EMPORCHI kept the other third. This is based on the assumption that the shipowners passed the benefits on to the users, which is rather doubtful in the case of break-bulk cargo carried by liner services.

In short, the institutional and rate changes introduced in 1981 resulted in some transfers of benefits among agents of the port system, but it is not clear whether most of these transfers actually reached the users or whether they remained in the hands of the shipowners or of EMPORCHI. EMPORCHI's new rate system was more rational than the old one, yet in the case of some products it allowed the company to keep a portion of the benefits.

C. EVOLUTION OF PORT CAPACITY

Although defining port capacity is quite a complicated matter, the formula laid down by the United Nations, in which the average performance of a port is linked with the number of hours during which its facilities are presumably available, has traditionally been used in this regard. Obviously, the actual figures obtained can vary with time, since there are changes in technology, sizes of vessels, the product mix and, in the case of Chile, the hours of availability of the ports.

Figures that could provide a quantitative idea of the evolution of port capacity are relatively scarce, and when they are available they are not always comparable, since ports undergo change as time goes by. For instance, at Valparaiso and San Antonio, the following changes occurred in port infrastructure during the 20 years from 1967 to 1986:

1975: Remodeling of berths 4 and 5 at the port of San Antonio;
1983: Conveyor belts and all mechanized installations removed from Baron Pier at Valparaiso;
1985: Construction of a new bulk-cargo facility at San Antonio, the North Dock (PANUL);
1985: All berths on the South Jetty at San Antonio destroyed during the earthquake of 3 March 1985.

This makes it more difficult to compare the capacities of the ports. In table 11, estimates of port capacity contained in various port surveys carried out over a period of years are reproduced.

In the Barraza and Ayarza study,[6] attention is drawn to irregularities that existed in the operation of the ports and in the hours they actually functioned. At the time the study was conducted, 14 hours of work were done daily and a maximum of 301 days were worked annually. The data it contains on performance per metre in 1967 indicate that 1 420 000 tons a year could be moved through the embankment and pier at Valparaiso, and that Baron Pier had a capacity of 870 000 tons consisting primarily of bulk cargo, since it was equipped with a mechanized unloading system. Thus, the port of Valparaiso had a total capacity of 2 290 000 tons. It was calculated that in 1967 the port of San Antonio had an annual capacity of 700 000 tons at the South Jetty and 460 000 tons at the pier, for a total of 1 160 000 tons.

Table 11

VALPARAISO AND SAN ANTONIO: EVOLUTION OF PORT CAPACITY
(*Thousands of tons*)

	1967	*1977*	*1986*
VALPARAISO			
Embankment and groin	1 420	...	3 239
Baron Pier	870	...	218
Subtotal	2 290	2 758	3 457
SAN ANTONIO			
South Jetty[a]	700	...	-
Pier	460	...	2 558
North Dock (PANUL)	-	-	486
Subtotal	1 160	2 058	3 044
TOTAL both ports	3 450	4 816	6 501

Source:
1967: Guillermo Barraza A. and Hernán Ayarza E., *Situación portuaria de las provincias del Norte Chico. Puertos de Coquimbo, Valparaíso y San Antonio*, Vol. II, publication No. 39 of the Department of Planning and Urbanism, Ministry of Public Works, Santiago, Chile, 1968.
1977: Instituto de Análisis de Sistemas Aplicados para el Desarrollo (IASA), *Estudio de las alternativas portuarias de la region central. Cuarta etapa. Requerimientos de infraestructura para las distintas alternativas*, Regional Intendance, Fifth Region, Regional Planning Secretariat, Santiago, Chile, 1978.
1986: Louis Berger International, Inc.-INECON Ltda., *Plan de desarrollo portuario V Región y factibilidad 1ª etapa*, Ministry of Transport and Telecommunications, June 1988.
[a]The South Jetty was destroyed in the earthquake of 3 March 1985.

In a study carried out in 1978 by the Instituto de Análisis de Sistemas Aplicados para el Desarrollo (IASA) on ports of the central zone, it was concluded that the operational practices existing at the time gave the port of Valparaiso an average handling capacity of 2 758 000 tons per year, while the port of San Antonio had a capacity of 2 058 000 tons.[7] As these figures were calculated on the basis of a simulation model, a breakdown by groups of berths could not be given.

The total capacity estimated for Valparaiso, which had the same facilities as in 1967, was 20% higher than the estimate in the Barraza and Ayarza study, while the figure for San Antonio was 77% higher. It should be noted, however, that in the latter case the infrastructure of the berth had been improved.

A study on the ports of the Fifth Region carried out in 1988 by the Louis Berger International, Inc.-INECON Ltda. consortium estimated that in 1986, following the institutional changes made with respect to ports, the port of Valparaiso had a capacity of 3 239 000 tons per year at its embankment and pier and 218 000 tons per year at one of the berths of Baron Pier (the other was not available), which brought the port's total capacity to 3 457 000 tons.[8] These figures were 25% higher than those relating to 1977 and 51% higher than the estimates for 1967. If only the figures relating to the embankment and pier—which can be compared more easily—are considered, the capacity in 1986 was 2.3 times that of 1967, i.e., 128% greater.

The same study estimated that the capacity of the port of San Antonio was 2 558 000 tons per year at the pier and 486 000 per year at a new bulk-cargo vessel berth built in the northern zone of the harbour (PANUL), for an annual total of 3 044 000 tons. The only figure at all comparable was that relating to the pier at San Antonio, whose capacity in 1986 was 5.6 times the estimated capacity in 1967. The two South Jetty berths which collapsed during the 1985 earthquake were used primarily for bulk-cargo movements, and in 1981, before the new institutional reforms went into effect, a record 1 477 008 tons of cargo were transferred through them (the equivalent of over twice the capacity calculated in 1967), at a time when their occupancy rates were 70% and 62%.

Chapter IV

MECHANICS OF PORT RESTRUCTURING

Since before the change of government in 1973, people had been aware that the Chilean port system was functioning very defectively. In the study made by Barraza and Ayarza in 1968,[9] a fairly detailed diagnosis was presented showing the defects which existed in port management and the way in which they contributed to poor use of infrastructure. The study's main conclusion was that the reasonable approach to increasing port capacity was to eliminate irregularities in operations and to refrain from making additional investments in infrastructure. A good diagnosis, however, was not enough. A far-reaching solution could not be found without confronting groups with tremendous power which could put enormous pressure on the managerial level and even on government.

The port problem was rather complex and had to be approached on many fronts. At the level of organized labour, consideration had to be given to maritime and longshoremen's unions. At the institutional level, account needed to be taken of EMPORCHI, the National Customs Service, the Department of Port Works (DOP), the Department of the Maritime Territory and the Merchant Marine (DIRECTEMAR) and government bodies at the highest level such as the Ministry of Transport and Telecommunications and the Ministry of Finance. Within the production sector, the role played by the many user interests at both public and private levels was negligible, except in the case of large enterprises such as the National Copper Corporation of Chile (CODELCO-Chile), the Paper and Cardboard Manufacturing Company (CMPC), the Farm Commerce Enterprise (ECA), the Chemical and Mining Society (SOQUIMICH), and groupings of those large corporations to form enterprises such as the Chilean Wood Corporation (CORMA). Account also had to be taken of the interests of shipping companies and of freight and Customs agents, which were very powerful and influential. In brief, the subject had many sides and involved many interests and responsibilities, which was why it had proved so difficult to solve.

Restructuring was a long process. It took a number of years and included various stages, each of which bore on different aspects of the process in varying degrees. What is certain is that the process got under way in 1973 and that in a number of aspects it is still incomplete. Lest someone think changes are always the result of careful planning, emphasis should be placed on the fact that, at least during the first years of the government which took office in 1973, no strategy had been elaborated as to how to confront the port problem. For the new government in its early stages, it was more than enough that the ports continued to function normally and that the unions did not interfere with the action it was taking at the political level. A strategy began to take shape only when the government consolidated its power, and it was becoming clear that the problems in the sector could have an adverse effect on the open economy model which was being applied.

A. REESTABLISHMENT OF DISCIPLINE IN PORTS

The first stage of the process consisted primarily of ensuring that the ports continued to operate and that discipline was maintained within them. This was basically a strategic goal during a period regarded as being marked by domestic disorder. The ports had been one of many centres of political and labour conflict during the Popular Unity government (UP), when ports had become real bottlenecks as a result of the many labour disputes and institutional disputes fought within them. Salvador Allende's administration even organized groups of volunteer workers to help relieve the bottlenecks in the system, and made efforts to break the control held by some labour groups which were against the UP. Thus, just as some workers had opposed the UP, when the military government took over it found that the trade unions in some ports had been fervent adherents of the Allende regime.

The new authorities set themselves the task of reestablishing discipline in the ports. This was not easy and called for considerable energy. In some cases, labour leaders who had supported the previous government were arrested, and occasionally force was resorted to with fatal consequences. The unions quickly got the idea that the new authorities were determined to do what was needed to ensure that the port system operated normally.

However, contrary to popular belief, that first stage in which order was established did not result in any restructuring of the systems then in existence or in any changes in the agreements signed between the Chamber of Shipping and the unions or between EMPORCHI and the workers it employed. The new government quickly perceived the grave danger of an international boycott by stevedores' unions against Chilean merchandise unless it could be proved that agreements with the workers were being respected, and it took the required action. In this, from the time it took over, it was supported by the principal labour leaders in the port sector, most of whom had opposed the UP.

Even during the UP, the unions had been politically divided between supporters and opponents of the government. In 1973, before the military government took over, a strike occurred which was basically political in nature and led to a division in the Executive Board of COMACH. Because of this, the new government had no difficulty finding leaders sympathetic to the regime. In 1973, shortly after the military government came into power, the International Confederation of Free Trade Unions (ICFTU) tried to set up a boycott against Chilean shipments in all the ports in the world. This was avoided thanks to the help of labour leaders who had opposed the UP, one of whom even went to Geneva with representatives of the Chamber of Shipping to explain what was happening in Chile and why the military government had taken over.

In 1975, some friction began to be felt among labour leaders owing to what they perceived as inappropriate interference on the part of the government in labour activities in other sectors of the economy which were not so sensitive to international pressure. These quarrels among leaders caused a division in the Executive Board of COMACH.

Not until conflicts arose in 1981 was co-ordination between the trade unions re-established, although when it was, it took on a different perspective.

The government repaid the support it obtained from some labour leaders by not applying its policies to either maritime or port unions. Moreover, before 1981 they were able to raise the pay levels of their members, as discussed in chapter III.

Although labour agreements were not structurally changed nor were operations rationalized during this first stage, the more orderly approach taken to the work had a positive effect on port operations.

B. PRELIMINARY ACTION BY THE ECONOMIC TEAM

The second phase in the process of reforming the port system began in 1975, when representatives of the government's economic team intervened.

Although this economic team, which would eventually introduce tremendous changes in the Chilean economic system, was a functional part of the government from the beginning and played an important operational role in the Ministry of Economy, Development and Reconstruction and especially in the National Planning Office (ODEPLAN), it was not established on a firm footing until early in 1975.

During 1974 it became apparent that the recovery of the Chilean economy would call for drastic changes in a number of areas. In addition, because of the oil crisis, which began to be felt in 1973 with serious consequences for Chile's terms of trade, Chile's economy was seen to require strict adjustment measures.

One of the principal goals of that adjustment was the elimination of the fiscal deficit, which called on the one hand for restructuring the tax system by making changes in the income tax and introducing a value-added tax and, on the other, for keeping public expenditure firmly under control. To control expenditure, the deficit of public enterprises had to be monitored. It was in that connection that the government's economic team became aware of the problems in the port sector.

The new economic policy was implemented by a very homogenous group of professionals in the Ministry of Finance and the Ministry of Economy, Development and Reconstruction, who almost without exception shared a philosophy based on the desirability of a liberal economy. This was the team behind the many reforms experienced by the Chilean economy in the 1970s.

In 1975, the economic team decided that public expenditure could not be brought down unless the government took control of certain enterprises whose enormous deficits were a cause of particular concern. One such enterprise was the State railway, to which a member of the economic team was appointed director; another was EMPORCHI, to whose board of directors members of the economic team were also named. The intervention in EMPORCHI enabled the team to obtain a thorough knowledge of the port situation and become the main source of inspiration for and the leading promotor of the reforms. The representative of the economic team assigned to the port sector was also made responsible for supervising other firms in the area of transport and of forestry which fell under the jurisdiction of the public sector. This dual role in the forestry and transport sectors probably had a decisive influence on the approach which would be adopted in dealing with the problem of the ports.

In the case of forestry, which is essentially an export activity, international transport was decisive. However, this transport involved not only port but also maritime shipping costs. There was a close relationship between these costs and the problems for freight rates caused by the monopoly of liner conferences and the reservation of cargo for national vessels. The cost implications of maritime transport, within which port transfer costs play an important role, were very substantial for the forestry sector. Embarking on the improvements needed by that sector meant maintaining a comprehensive view of the problems of international transport. In that connection, the fact that the public enterprises which needed supervision and rationalization included a number of firms in the shipping sector opened the eyes of the members of the economic team to those problems. Finally, the financial situation of EMPORCHI, unlike that of other enterprises in the transport sector, did not present the fiscal authorities with any difficulties. EMPORCHI had traditionally shown a positive financial balance, which was in fact not surprising considering the monopoly it enjoyed. All this, together with the political problems related to the ports sector, caused the authorities to decide to deregulate the merchant marine as a first step in port reform.

In the opinion of those with leading roles in the restructuring process, another consideration weighed very heavily on the decision to begin the modernization process by deregulating the merchant marine. The fact was that if modernization began with the port workers' unions, the monopoly in the shipping sector might mean that many of the benefits obtained through improving the ports would accrue directly to the shipowners rather than to the final users. Eliminating the workers' monopoly to benefit shipowners seemed to make no sense.

It took a relatively long time—close to four years—to modify the Merchant Marine Act. Shipowners have always constituted a powerful group in Chile. Shipping companies with their head offices at Valparaiso maintained very close ties with the Chilean Navy, owing not only to geographical proximity and personal relations but also to the role assigned to the merchant marine in the national defence policy.

In addition, the organization of international maritime transport is very complex and constitutes a highly specialized subject which people outside the sector find difficult to master. That has always worked to the advantage of shipowners. Generally, whenever ministers or public officials responsible for the problem came close to dominating it, they had been replaced owing to political change. On the other hand, the representatives of the shipowners were not only very capable and highly professional people but also enjoyed great stability in their offices. In spite of all this, in 1980 the Merchant Marine Act was finally liberalized by eliminating reserve cargo privileges and opening coastal shipping to foreign vessels (Decree-Laws No. 222 of 31 March 1978 and No. 3059 of 22 December 1979). These changes, which made the system much more flexible and competitive, did not damage the merchant marine as some people had anticipated. On the contrary, even the shipowners were aware that the changes had been positive for the country.

This long period which was devoted mainly to liberalizing the Merchant Marine Act was not time wasted as far as the restructuring of the ports was concerned. It gave those economic team members who were responsible for the transport sector an opportunity to form a more accurate idea of what went on in the ports and how important it was to improve the situation. The time was also used to incorporate EMPORCHI in a more open system of operation which enabled third parties to be employed in the movement of freight within the port area.

The economic team began to participate more intensively in EMPORCHI in 1977 and 1978. In that period, the man appointed to head the Ministry of Transport and Telecommunications was a transport economist who was in the confidence of the major figures on the economic team and had managed to reduce the staff of the State railway considerably without setting off any serious labour disputes. He had also been active in respect of the coal companies. At the same time as his appointment, five members of the team of economists which worked in the Ministries of Finance, of Economy, and of Transport and Telecommunications were brought into EMPORCHI as government-appointed directors. Only one director was in the confidence of the Executive Director of EMPORCHI, who himself was a retired naval officer appointed by the President of the Republic but in the confidence of the Chilean Navy.

The main instrument by which this group of economists could exert pressure on the Executive Director was the veto available to the Minister of Finance, who since 1975 had enjoyed special powers in respect of all investments considered by public enterprises. This veto was used to slow down investment and keep EMPORCHI from buying new freight-moving equipment, thereby promoting the purchase of equipment by private enterprises. This was one of the first important steps taken to open up the port system to private operators. In addition, EMPORCHI was forced to dismiss staff and to put a freeze on hiring. In order to make it possible to dismiss staff without causing labour unrest, an indemnification policy authorized by the Minister of Finance was applied. The indemnifications were a central ingredient in the process of restructuring as such.

EMPORCHI's personnel was streamlined in stages. Between 1973 and 1974, the number of workers was reduced by close to 15%, primarily for reasons which had nothing to do with EMPORCHI. Between 1975 and 1978, there were no major variations, because at that time no priority was given to changing the situation which prevailed in the sector. On the other hand, in 1979 strong pressure to reduce personnel began to be observed. It was, however, not until 1981 that a thoroughgoing restructuring process was embarked upon and personnel was cut by over 50% (see table 4).

C. THE ACTUAL PROCESS OF RESTRUCTURING

The third stage in the process was that of restructuring as such. In this stage, which really got under way in 1980 although restructuring may be said to have begun in the preceding stage, a deliberate, well-planned effort to put an end to the inefficiency observed in port operations was embarked upon. This stage was initiated at a time when the prestige of the economic team was at its highest as a result of the culmination in 1981 of the process of economic expansion, the ability it had demonstrated in the application of other reforms and the support it had in the government and in entrepreneurial sectors.

If restructuring had taken a year longer and had been attempted in 1982, when the crisis had already erupted, unsurmountable obstacles might have arisen. Moreover, even now it has still not been possible to implement many of the ideas for granting concessions in respect of different types of infrastructure so that investments may become the exclusive responsibility of the private sector. This failure has occurred in spite of the fact that legislation in this respect was adopted in 1981, at the same time as changes were introduced in the labour regulations.

Although the labour problems which affected Chilean ports had been accurately diagnosed prior to the application of the reforms, the costs of the various components of the system then in operation had to be exactly calculated and reliable documentation had to be produced demonstrating the irregular practices engaged in by different groups of workers. Well-known international firms of auditors were hired to conduct the studies required, and they prepared a breakdown of the various cost implications of the transfer of freight. The restructuring project was also supported by executives in the Chamber of Shipping, who were very familiar with the system and could bring practical ideas to bear on its improvement.

The reasons for considering the advisability of making the changes in 1980 were numerous. On the one hand, the cargo transferred through the ports had begun to increase considerably. In San Vicente and Talcahuano, the main ports for the export of forestry products, the volume of freight had been increasing substantially since 1973. Export shipments through these ports practically doubled each year between 1972 and 1977. Between 1977 and 1980, they continued to increase at the high rate of 29% a year on average. As shown in the study carried out by the Catholic University,[10] it was obvious that unless changes were made in operational practices, especially by increasing the number of hours actually worked at a port, which would mean effecting changes in the shift system, it was going to be necessary to expand the infrastructure.

In Valparaiso, where the volume of freight had remained much the same for decades, considerable increases began to be noted in 1977. In 1979 a record amount of freight was moved, surpassing the 1977 figure—which itself had been unprecedented—by 18.5%. In addition, everything indicated that both imports and exports would go on expanding in the years to follow.

Problems of port capacity could have been solved by adding infrastructure as had been the practice in the past and was still done in many other ports all over the world. Although the cost was high, it was not unreasonable by comparison with the cost traditionally paid.

In addition, in 1980 the serious tensions which had threatened to block Chilean trade had relaxed, and it seemed more feasible to deal with the problem of the rationalization of port activities. Moreover, it was felt that if such an effort were not made, obstacles to the development of exports might arise, especially in sectors such as forestry and fruit growing where international transport was critical for competitiveness abroad. Finally, the Chilean economy had attained a high degree of openness in all directions. Tariffs had declined to 10% in respect of all commodities, the international flow of capital had opened up, and a fixed exchange rate was being maintained with the idea that the monetary policy would adjust itself automatically in accordance with capital movements. The effectiveness of this economic model of total openness to world trade was jeopardized by the monopolistic practices of the port system.

Restructuring meant revising labour regulations in detail, which would make confrontation with the unions unavoidable, with consequences difficult to foresee. It meant designing a strategy which would minimize the likelihood of a dispute and, if one arose as was highly probable, would maximize the possibilities of ending it. There were only two mechanisms which could be used by the unions to exert pressure: recourse to their ability to paralyze the ports and the threat of the harm this could do to international trade, especially trade in perishables such as fruit; and recourse to their ability to obtain the support of the international maritime and port unions in respect of a boycott of Chilean traffic. Both of these enormously powerful mechanisms were used by the unions,

and their use made it possible to effect considerable improvements in the final arrangement reached with the workers, which, as will be seen below, turned out favourable for them.

The strategy for rationalizing port activities took three important areas of action into account. The first and most important of these, without which a solution to the dispute would have been impossible, was the designing of a system under which workers could be compensated for the loss they would suffer in consequence of the change in existing practices. To do this, it was necessary to collect reliable information on the real earnings of various groups of workers. For this purpose, a firm of auditors was engaged to conduct a study on the income received by workers under various headings for use in estimating the compensation required from the government if changing the system was not to damage the workers and if they were to agree to accept the changes made. Systems of compensation were designed both for EMPORCHI workers who would be replaced and for workers affiliated with maritime unions.

The second area of action provided for in the strategy was to ensure that port operations would suffer as little as possible should the maritime unions decide to strike.

To achieve that objective, before the reform went into effect, on-shore work was opened up to private enterprises providing port services under contract to owners of cargo and shipowners. On 1 June 1981, EMPORCHI began a substantial reduction of its personnel and called a partial or total halt to some of its on-shore services, thereby making it possible to bring the private sector into port operations. Personnel was reduced drastically almost without friction since those who were laid off, many of whom were hired by the private sector, were offered the opportunity of retiring after 20 years of service, of receiving a six months' wage indemnification, and of joining a plan for the establishment of new enterprises through loans from the Production Development Corporation (CORFO) and the Technical Co-operation Service (SERCOTEC). Generally speaking, those who left did so voluntarily.

Openness to private enterprise was essential for keeping port operations going when stevedores called a strike because of the abolition of the registration system. Private enterprises, whose employees had no loyalty to unions of the conventional type, filled in for union members, with some difficulty at first but very effectively in the end.

In addition, the reform had to take place during a period when port activity was light and pressure could not be applied by blocking perishable freight. The best time was September and October 1981, when the dispute over the law changing the port labour system occurred.

The third area of action provided for under the strategy consisted of keeping the situation and the many types of irregularities to which it gave rise adequately documented, so as to be able to support a press and television campaign should a dispute break out. In the end, such a campaign was conducted and was extended to all the communications media available to the government, television playing a particularly important role. The campaign was conducted with considerable efficiency and persuasiveness. During the negotiations with the unions, representatives of the government discretely revealed their possession of data of various sorts, which weakened the workers' position.

Before looking at the situation which occurred after the promulgation of Law No. 18 032 restructuring the labour system in ports, it should be noted that this law, like the majority of the laws enacted during the military regime, was discussed *in camera* by the legislative commissions of

the military government. While this initiative was being examined in detail at government level, the maritime unions remained in ignorance of its true dimensions. The first contact which the maritime unions had with the government did not take place until early in September 1981, when the law was already all but adopted.

The negotiation of this initiative by the government and its defence before the public were conducted by the Minister of Labour and Social Security. The central argument was based on the contention that there was no justifiable reason why workers in maritime unions should receive exceptional treatment. The registration system was a particularly irritating way of restricting the freedom to work. The fact that registered workers subcontracted other workers who enjoyed no security or legal protection and were paid a fraction of what they had coming to them was obviously unacceptable and generally repellant. Under the new law, if for reasons of security it was deemed necessary to issue a permit to work in a port, a special license which did not have to be restricted to a privileged group of workers would suffice. At the end of September 1981, registered workers numbered 2 200 in the entire country, whereas the number of those working without being registered totalled 11 600.

The government also maintained that men working in ports should form their unions and negotiate collectively the same as other workers. Under the new Chilean labour law, this meant doing away with negotiations carried out by a tripartite commission between all workers and all enterprises, and instead negotiating at the level of unions set up for each enterprise. Those who helped design this law reported that it produced a radical change in labour relations. Nonetheless, the Ministry of Labour and Social Security was still very much concerned to know how many permanent workers there would be under the new system of port operation established by Law No. 18 042, enacted when the labour practices were changed. Collective bargaining was virtually impossible in a system in which workers had only a casual relationship with their employer, as they did during the first period in which the new system was in operation. The formation of stevedoring companies in which relations between management and labour were more stable took time. Furthermore, a sizeable portion of the labour force still functioned without enjoying job security. Thus, the new system replaced the structure build up over the years, but no workable alternative system was established that was compatible with port operations.

From the beginning, it was made known that the possibility existed for compensating workers monetarily for the loss of their acquired rights. No indication was given as to the kind and amount of this compensation, but a door was left open for negotiating those details. In actual fact, the law enacted provided for that possibility in a provisional article, which was indeed the cornerstone of the final arrangement agreed upon. The granting of a generous compensation for the abolition of the inefficient worker-controlled monopoly weakened all resistance to the new system and wrested support from those who were striving to maintain the *status quo*.

Meetings between the unions and the government to discuss the new law began on 2 September 1981, and on 23 September, before those discussions had ended, Law No. 18 032 was published in the *Diario Oficial* (the official government daily register). Its adoption came as a surprise even to the Chamber of Shipping, which had participated actively in the consideration of alternative solutions. Its members had proposed a scheme whereby registered workers would be gradually absorbed into the stevedoring companies to be set up within the new system.

Difficulties occurred immediately. Registration badges were replaced by a port worker's license (PTP) which was valid all over the country and could be obtained without delay by workers who had formerly been registered, by workers replacing them and subcontracted by them and by any citizen desiring to work in a port. It was only necessary to meet certain requirements including being at least 18 years old, being able to show a certificate of good health and reputation, and having an aptitude for the kind of work involved. Workers say that shipping agencies immediately stopped seeking manpower from the unions making up COMACH. In the meantime, the Minister of Labour and Social Security announced that, as a provisional measure, the law permitted workers who felt that their income was considerably reduced by the operation of the new system to approach the government through the Ministry of Labour and Social Security within a period of 60 days to seek compensation designed to prevent such a reduction.[11] For those purposes it was provided that, beginning on the same day the law was enacted, a high-level technical committee within the Ministry of Labour and Social Security should meet with labour leaders in the port sector for joint consideration of changes in the economic situation of maritime workers and, if necessary, should bring the proposals made in that respect to the attention of the instances established under the law.

The unions lost no time in expressing their dismay. Their complaints bore in particular on the lack of transparency of the legislation, as reflected in the fact that the entrepreneurs had been informed of and duly prepared for the change in the labour system applied in the ports, while they, on the other hand, had had no real opportunity to air their views before the reform took effect.

Their dissatisfaction was increased by the fact that workers employed by the private stevedoring companies, set up a few months previously after the dismissal of the EMPORCHI freight movers, were put to work immediately to ensure that service continued.

The heads of the maritime unions met urgently to consider the situation. Some of them were quoted as follows: "We have all joined the ranks of the unemployed at a single stroke. The new provisions have made us subject to what the employers want to pay us, a situation which is much worse for those of us who have been in leadership positions, since now nobody will want to give us work. Out of desperation, we thought of setting up our own stevedoring companies, but right away we saw that this can't be done since we have no capital and could never compete with the big companies which have plenty and are willing to use any means to quash competitors. Furthermore, a shipping company representative has come seeking hands for a ship to be unloaded and is offering a flat rate of a thousand pesos (US$25.60), whereas before, for the same work, a stevedore received around five thousand pesos (US$128.20) depending on the volume he moved."[12]

Of course, the entrepreneurs saw things in a very different light. According to them, the unions in some of the country's ports, including those at San Antonio, Arica and Valparaiso, were refusing without explanation to furnish shipping companies with lists of men for use in recruiting personnel. They also reported that the percentage of workers employed in various ports who had registration badges was 90% in Arica, 65% in Iquique, 80% in Antofagasta, 100% in Coquimbo, 30% in Valparaiso, 5% in San Antonio, 75% in Talcahuano, and 100% in Punta Arenas. The entrepreneurs did not conceal their satisfaction that the port infrastructure had recently grown by 50%, making it possible to work 24 hours a day instead of 13 hours a day as had previously been the case.

On 30 September 1981, the workers stopped their activities but in order to avoid legal sanctions under the legislation then in force, which had already been applied in other cases, they did not use the word "strike." The union heads said the men were not refusing to work, but that what

they were asking was to be allowed to negotiate the wages of the workers hired and the jobs they would be carrying out. In particular, they complained that they were being hired as dockhands, only to be assigned other work later on.

The danger to the government lay not so much in the paralyzation of the ports, which went on operating in spite of everything (it must be borne in mind that this was a slack period with no perishable cargo involved) as in the possibility of an international boycott.

Also on 30 September, the Federation of Trade Unions for Harbour Employees, which had maintained relations with such federations in other countries for a long time, received a cable from the inter-American representative of the American Federation of Labour-Congress of Industrial Organizations (AFL-CIO) expressing solidarity and stating that he had seen Law No. 18 032 and considered that it arbitrarily abolished the rights acquired by shipside workers. He also expressed concern for the future and survival of the democratic labour movement in Chile and said he awaited further news regarding the situation there. In the days which followed, the unions considered the possibility of a boycott, and the government directed its efforts to preventing such action.

The strategy to prevent a boycott consisted first in making clear the government's willingness to compensate workers for any losses the new legislation might have been causing them, and in persuading them not to abandon their work. Thus, on 30 September the Minister of Labour and Social Security announced that, if workers took the initiative in deciding to stay away from the ports, not only would they be denied the economic compensation proposed for those with registration badges should Law No. 18 032 prove economically damaging to them, but they would also lose their jobs. Another event that took place on 30 September 1981 was the first meeting of a working group appointed by the Minister of Labour and Social Security and by the maritime unions. That meeting was attended by all the leaders in the sector. The Minister reported that the group would spend 60 days studying the compensatory machinery to be submitted to the President of the Republic for his approval.

The other part of the strategy was similar to that adopted in the case of other boycott attempts, and consisted of establishing contact with international labour leaders to explain the situation to them. The idea was to convince them that the workers were receiving fair treatment.

On 3 October 1981, the agreement taken at union level to ignore the entrepreneurs' requests for men had gone into effect and the ports began operating with men not on the union rolls. However, the Chilean Chamber of Shipping told the press that the port of Valparaiso was functioning normally in spite of the fact that only 3% of the men on the register were working. Of course, it could not have been operating normally, since the productivity of unexperienced workers is lower. What is important, however, was that the port was operating at all.

In the meantime, conversations continued between the heads of the maritime unions and the technical committee established by the government to study the matter of compensation. The Minister of Labour and Social Security let it be known that as much as US$60 million might be available for the government to use in compensating workers. He also showed that there was nothing to justify an international boycott, and certainly not the fact that everybody who knew how to perform a task was given the right to a registration badge, especially if men who had worked before and had been the only ones entitled to the badge were given the possibility of receiving compensation for any loss they might suffer.

The initiative taken by the stevedores union at Valparaiso to organize a stevedoring company called the Chilean Port Consortium Ltd. (COPOR) was a fair indication of the confusion that reigned on the side of organized labour. The objective of creating this enterprise was to ensure the presence of a source of employment at any cost; however, the initiative was considered irrelevant as by a meeting of national port labour leaders, who ordered its dissolution. In general, the enterprises set up by stevedores after the labour dispute ended subsequently failed, except for two or three which are still operating in ports in the northern part of the country.

On 19 October 1981, information was published concerning the system for compensating registered workers. The system was reflected in a table in which compensation was based on the average remuneration obtained during the preceding six months and on the date of return to work. With respect to the date of return, a distinction was drawn between the following five categories of workers: those who renewed their registration badges during the period between 25 September and 10 October, who received the largest compensation; those who renewed their badges prior to 24 October, i.e., five days after the publication of the table, who received 8% less than those in the first category; those who renewed their badges between 25 and 31 October, who received 29% less; those who renewed them between 1 and 10 November, who received 45% less and, finally, those who renewed it between 11 and 25 November, who received 64% less (see table 12). The system was designed to encourage workers to return promptly to their jobs. It is not clear what logic was used in calculating the table or on what laws it was based. These points are, in fact, so unclear that even today claims are still pending with regard to the mechanics of calculating the indemnification.

In respect of the compensation described above, it should be noted that this was not the only money offered to registered workers. They were also to receive money from two other sources.

First, the money in a national housing fund comprising contributions from employers only and administered by both employers and employees would be distributed. Approximately 480 million pesos, whose value was then the equivalent of over US$12 million, had accumulated in that fund. The National Housing Foundation handed those resources over to the government, which took the responsibility for distributing them among the workers on the basis of their earnings between 1975 and 1981 and without discriminating with regard to the date on which their registration badges had been renewed.

Workers would also receive money through the distribution of various funds set up out of employers' contributions and kept by the Chamber of Shipping. The funds included one for scholarships, which was to be distributed on the basis of the number of dependents of each worker who were enrolled in school; a fund for union headquarters, which was to be distributed among those unions which had scheduled building projects; and a national directors fund for union heads. The Chamber of Shipping gave the money accumulated in those funds to each union for distribution.

Finally, many workers also obtained a retirement or disability pension prior to reaching the age of retirement. The government was fairly liberal in granting such benefits.

The workers rejected the table of compensations proposed by the government on grounds that they were incommensurate with the savings made by the enterprises. An interview was sought with the President of the Republic to request that the law be changed, and it was agreed to launch a new appeal for international support. The workers also agreed to appeal again for help from all other unions in the country, whose display of solidarity did not extend beyond moral support.

Table 12

PROPOSED COMPENSATION FOR REGISTERED WORKERS
(*Chilean pesos*)

Average monthly remuneration during previous 6 months	*Week of return to work*				
	0[a]	*1*	*2*	*3*	*4*
50 001 or more	1 302 400	1 184 000	947 200	710 400	473 600
40 001 - 50 000	943 800	858 000	686 400	514 800	343 200
30 001 - 40 000	765 600	696 000	556 800	417 600	278 400
20 001 - 30 000	566 500	515 000	412 000	309 000	206 000
10 001 - 20 000	271 700	247 000	197 600	148 200	98 800
10 000 or less	118 800	108 000	84 400	64 800	43 200

Source: *El Mercurio*, Santiago, Chile, 20 October, 1981.
[a]This column corresponds to 700 workers who had already returned to their jobs when the calculations were made.

The AFL-CIO sent two representatives to Chile to acquaint themselves with the situation there. They met with labour leaders, representatives of the Ministry of Labour and Social Security, and executives of the Chamber of Shipping. They were favourably impressed by the size of the indemnification to be received by workers for losing their privileges. Finally, they observed that so long as the work in the ports was being carried out willingly and the armed forces did not step in, there would be no boycott.

Thus, considering that effective international support was unlikely, that the compensations seemed attractive and that delays in reaching an agreement could cost a great deal in terms of both energy (since many workers were returning to their jobs on their own initiative) and money, on 31 October 1981 COMACH appealed to workers to normalize their activities.

In Valparaiso, the response to the appeal was massive and immediate, but in San Vicente, resistance continued. Some of the workers in the latter port had been affected by more serious problems than were other workers, so that it was more difficult to come to a settlement. As a result, compensations in Valparaiso were substantial, while they were comparatively low in San Vicente and Talcahuano. In any case, the re-incorporation of the Valparaiso workers put an end to the dispute and lent practical support to the new system.

The compensations received by workers in the end and the cost to the government are not easy to estimate. One rough estimate is that on average some 2 900 workers were paid approximately 500 000 pesos each. At the rate of exchange at that time, this figure represents a compensation of about US$12 800 per person and a total disbursement of some US$30 million. If this is the real amount finally paid, it is equivalent to half what the Minister of Labour and Social Security had

said he was willing to pay for the final settlement. In addition to this compensation, the amount received by workers from other sources should also be taken into consideration.

On 15 October 1981, while the labour dispute was still under way and almost simultaneously with the promulgation of Law No. 18 032, Law No. 18 042 was enacted to substantially change the system under which the ports operated by formally opening them up to the private sector in terms both of operations and of investment. This law created a national port corporation and port companies in each port or group of ports, and defined the purpose of the latter as being restricted to the administration of the infrastructure of their respective ports. The law provides that, when used in that connection, the term "administration of infrastructure" shall mean the assignment of ships to berths, the allocation of storage space for goods, the regulation of the use of port areas, and the performance of activities for the maintenance and development of the ports. The law further provides that port infrastructure may be administered indirectly through the awarding of concessions to operate the facilities comprising it. Even more important is the fact that the law gave private enterprises full rights to engage in port activities, by providing that the port companies would under no circumstances be permitted to handle the transfer, carriage or storage of goods.

The promulgation of this law was preceded by three decrees with force of law adopted by the Vice-Ministry of Transport and published in the *Diario Oficial* on 25 September 1981, along with Law No. 18 032. By means of those decrees, 602 EMPORCHI jobs (of which 197 were vacant) were abolished. Most of the personnel affected retired of their own accord since, as noted above, the conditions for retirement were attractive. In the decrees it was stated that people who lost their jobs because their positions were abolished and who did not meet the requirements for retirement would have the right, by way of an indemnification payable by the State, to continue drawing for a period of six months the total remuneration they received for their last month in service. In this respect, EMPORCHI reported that the abolition of posts was in accordance with decisions communicated to the personnel well in advance and that 85% of the people affected had voluntarily resigned. A large proportion of those who left EMPORCHI went on to work in the new private stevedoring companies, which played such an important role in keeping the ports active while the maritime unions were on strike.

The new law was entirely successful as applied in respect of operations relating to transfer and carriage, almost all of which are being carried out by private enterprises. However, its final intention, which was to ensure that investment in infrastructure was also conducted as a private sector venture and that the existing infrastructure was operated by private concerns through concessions, was not realized. Immediately after the promulgation of the law, a consulting firm with broad experience in infrastructure and transport studies was hired to determine exactly what mechanisms should be applied in the granting of concessions in Chilean ports. The report, which was completed in mid-1982, specified port by port, berth by berth, warehouse by warehouse and storage area by storage area how to grant the concessions stipulated in the law. In preparing the report, the consultants took into account international experience in port administration and worked closely with the government's economic team which had promoted the changes required by the law. By that time, however, the impetus to liberalize and privatize had lost its force owing to the collapse of the government's economic policy. The full application of this law and its amendments was still under consideration in 1989.

D. CONSOLIDATION OF THE SYSTEM

The consolidation of the restructured system has not been exempt from difficulties. The first, although not the most important, problem to arise was that of paying the compensations in a way which would satisfy the workers. As has been mentioned, the system of compensations and the repayment of funds as a result of the liberalization of labour practices left many workers dissatisfied. The legal base of the formulas used and of the payments made has given rise to disputes, some of which are still pending in courts of justice.

Although they received compensation for the loss of their privileges, dockhands did not find it easy to see their wages drop from a level equivalent to US$128 to one of only US$26 for a day's work, although the latter figure roughly corresponds to the wages received by workers in other sectors of the national economy. The effect of this drop in wages was aggravated by the lack of protection and stability which is an adverse feature of the new system. This situation led workers to organize themselves in order to protect their interests, which resulted in new disputes. Thus, towards the end of 1985, licensed dockhands went on strike all over Chile. The origin and final result of that strike constitute an important chapter in the history of the restructuring of the ports.

Once the reform got well under way in November and December 1981, access to work in ports was made exceedingly flexible. The only requirement was to obtain a PTP, which the authorities granted fairly liberally, thereby thinking to guarantee the freedom to work and to prevent a return to the monopoly that had cost so much to break down. Nearly 23 000 licenses were granted, which although roughly the same as the number of people associated with the ports, far surpassed the number needed to meet port requirements with relatively stable personnel.

It should also be noted that the new system led to the creation of many new port enterprises known as stevedoring companies, which functioned highly competitively using their own or rented equipment. Ship and cargo owners benefitted from the competition among these companies and promoted it by asking for price quotations or by organizing bidding in respect of the handling of their freight. In such conditions, workers other than those employed in enterprises associated with the Chamber of Shipping, which respected the daily wage agreed to in September 1981 with the Ministry of Labour and Social Security, were paid little more than the minimum wage for the days they actually worked and were not compensated for the time they lost. This situation became unacceptable, causing licensed workers first to organize and then to go on strike.

The strike began in Iquique at the end of 1985, the intention being to extend it to the rest of the country. It failed because the ports managed to go on operating by using the better organized stevedoring companies associated with national ship operators, Customs agents, or freight forwarders. The workers employed by such firms had managed to make other arrangements with regard to pay and job stability, and in some cases had even formed labour unions within their enterprises to negotiate working conditions, so that they did not at all share the concerns of other workers. On the contrary, to some extent they considered the latter to be a source of dangerous competition.

The authorities learned some important lessons from this experience. In the first place, they saw that the PTP not only served no purpose but that in the long term it could become the source of a new labour monopoly. Consequently, a decision to eliminate it was adopted. Under Law No.

18 462, which amended Law No. 18 032, any worker having an identity card and whose name is on a list presented by the port service by which he is employed is authorized to work.

Secondly, it was decided that the proliferation of stevedoring companies which operated with virtually no requirements in terms of facilities or of job security was undesirable. After the promulgation of Supreme Decree No. 48 adopted by the Ministry of Labour and Social Security in 1986, such enterprises—which were known as "briefcase enterprises" since they did not even have offices —were required to have a known domicile and to deposit a guarantee with the Labour Inspection Office amounting to the equivalent of four times the value of the highest monthly remunerations paid over the previous year. The guarantee was to be paid in a monetary equivalent which was readjusted daily on the basis of the cost-of-living index.

The situation has gradually improved in that stevedoring companies have been formed which employ permanent workers, a large proportion of whom (approximately 80%) are now unionized. The activities of these unions are confined to the company with which they are associated. Their leaders are better educated than labour leaders were in the past, having completed their secondary education at the least and some of them even being professionals. The permanent staff of these companies earn a fixed monthly wage, or are guaranteed a minimum monthly amount in addition to receiving an incentive for each ship worked. The formula normally applied in the case of such workers guarantees them a minimum wage for four shifts a month at 4 241 pesos a shift (in July 1989), which is the equivalent of approximately US$61, and they are paid an additional 4 241 pesos for each shift actually worked. Casual workers are hired at 4 241 pesos (approximately US$15) a shift. It is important to note that the amount of 4 241 pesos a shift corresponds to the minimum figure which the Chamber of Shipping undertook to pay in 1981 when the system changed, the readjustments due to the variation in the consumer price index having been taken into consideration as is the usual practice in enterprises affiliated with the Chamber of Shipping.

In spite of these positive developments, some abuses may still be found within the system. Companies exist that are able to hire workers on a permanent basis but do not do so, and that pay the legal minimum of about 600 pesos a day instead of the 4 241 pesos prescribed. At present, nearly 60% of the work done at the port of Valparaiso is performed by permanent workers. According to an estimate made by a member of the Chamber of Shipping, 60% of the remaining work could be performed by permanent workers. One of the problems with casual workers, apart from the job instability to which they are exposed, is that they receive no unemployment subsidy from the municipalities.

Another aspect of the restructuring exercise which could not be carried out as planned has to do with the application of Law No. 18 042 on the organization and functions of port authorities. The main aims of this law were to create port companies in order to decentralize the ports, to hand over infrastructure on concession, and to see that the private sector became responsible for projects to improve existing facilities and construct new ones in ports administered by EMPORCHI. These goals could not be met due to a lack of agreement between the members of the economic team and the Chilean Navy.

The most important result of the delay in the application of the institutional aspects of the restructuring exercise was that large investment projects in the sector, especially in the ports of San Vicente, San Antonio and Valparaiso, were held up. In the meantime, it is hoped that the private sector will invest in new berths outside the EMPORCHI port areas, such as at Quinteros in the

Fifth Region and Coronel in the Eighth Region, in order to make up the deficit in the projected capacity. This situation will have to be remedied in the near future in order to avoid infrastructural restrictions which could become serious if not dealt with in a timely manner.

It should be noted that the idea of privatizing port infrastructure and its operation was intimately related to the conviction that, the more decentralized port operations became and the larger the number of different enterprises participating in them, the more difficult it would be to return to the monopolistic practices which had marred the previous system. Decentralization, together with fair labour practices, are needed if the restructuring exercise is to succeed in the end.

It is generally agreed, except by the unions, that the port system should be structured around the changes applied in the years covered by this report, and that it would be inadvisable to return to practices which pose obstacles to the transport of goods traded outside the country. This is especially true in the case of practices which could jeopardize the competitiveness of exports, since the promotion of their competitiveness will be the cornerstone of any economic policy to achieve the country's full economic and social development.

Notes

[1]Guillermo Barraza A. and Hernán Ayarza E., *Situación portuaria de las provincias del Norte Chico: Puertos de Coquimbo, Valparaíso y San Antonio*, Vol. II, publication No. 39 of the Department of Planning and Urbanism, Ministry of Public Works, Santiago, Chile, 1968.

[2]*Ibid.*

[3]*Ibid.*

[4]In 1930, docks 1, 2 and 3 measured 450 metres; docks 4 and 5 measured 400 metres; the platforms of what are now docks 6 and 7 measured 130 metres. In 1960, the platforms of docks 6 and 7 were joined and now measure 320 metres. In 1975 what are now docks 4 and 5 were remodeled. They measure 342 metres.

[5]Catholic University of Chile, Inter-American Course on Project Preparation and Evaluation (CIAPEP), *Ampliación del puerto de San Vicente*, 1978.

[6]*Op. cit.*

[7]Instituto de Análisis de Sistemas Aplicados para el Desarrollo (IASA), *Estudio de las alternativas portuarias de la región central: Cuarta etapa: Requerimientos de infraestructura para las distintas alternativas*, Regional Intendance, Fifth Region, Regional Planning Secretariat, Santiago, Chile, 1978.

[8]Louis Berger International, Inc./INECON Ltda., *Plan de desarrollo portuario V Región y factibilidad 1ª etapa*, Ministry of Transport and Telecommunications, June 1988.

[9]*Op. cit.*

[10]*Op. cit.*

[11]*El Mercurio*, 26 September 1981.

[12]*El Mercurio*, 27 September 1981.

Annex I

EVOLUTION OF PORT COSTS

Note: In the examples which follow, costs are shown in U.S. dollars at 1986 values.

Example 1: Fruit (apples)

		1970	*1975*	*1980*	*1986*
Number of crates		200 676	200 676	200 676	200 676
Yield (crates/shift/hatchway)		4 919	4 919	7 027	12 162
Number of hatchways		4	4	4	4
Length of vessel (meters)		154.05	154.05	154.05	154.05
HANDS (number)					
Hands on board					
Ship supervisor		1	1	1	-
Co-ordinator		-	-	-	1
Deck master		1	1	1	1
Assistant deck master		1	1	1	-
Ship's clerk		1	1	1	-
Stowage master		1	1	1	1
Stowage clerk		-	-	-	1
Stowage clerk	per hatchway	1	1	1	-
Foreman	per hatchway	1	1	1	-
Seaman	per hatchway	3	3	3	-
Tallyman	per hatchway	1	1	1	-
Stevedore	per hatchway	8	8	8	2
Forklift operator	per hatchway	1	1	1	1
Packer	per hatchway	1	1	1	3
Gangway operator	per hatchway	1	1	1	1
Watchman		1	1	1	1
Hands on shore					
Dock master		-	-	-	1
Dockhand	per hatchway	4	4	4	2
Forklift operator	per hatchway	1	1	1	1
Tallyman	per hatchway	1	1	1	1
Crane operator	per hatchway	1	1	1	1
Storeroom keeper		-	-	-	2
Measurer		-	-	-	2
Length of work day (hours)		6.5	6.5	6.5	7.5
Shifts per day		2	2	2	3
Number of necessary shifts		15	15	11	6
Number of hands		43	43	30	18
Hours of stay		174.5	174.5	126.5	48
Hours of wait		-	-	-	-

Example 1 (continued)	*1970*	*1975*	*1980*	*1986*
NUMBER OF MEN PER SHIFT				
Hands on board				
Ship supervisor	15	15	11	-
Co-ordinator	-	-	-	6
Deck master	15	15	11	6
Assistant deck master	15	15	11	-
Ship's clerk	15	15	11	-
Stowage master	15	15	11	6
Stowage clerk	-	-	-	6
Stowage clerk per hatchway	43	43	30	-
Foreman	43	43	30	-
Seaman	129	129	90	-
Tallyman	43	43	30	-
Stevedore	344	344	240	36
Forklift operator[a]	43	43	30	18
Packer	43	43	30	54
Gangway operator	43	43	30	18
Watchman	15	15	11	6
Hands on shore				
Dock master	-	-	-	6
Dockhand	172	172	120	36
Forklift operator[a]	51	51	38	26
Tallyman	43	43	30	18
Crane operator	43	43	30	18
Storeroom keeper	-	-	-	12
Measurer	-	-	-	12
Total number of men per shift	1 130	1 130	794	284

[a]For every four gangs, two additional forklifts are used, for a total of ten.

Example 1 (continued)	*1970*	*1975*	*1980*	*1986*
COST OF HANDS (US dollars)				
Hands on board				
Ship supervisor	241	198	172	0
Co-ordinator	-	-	-	109
Deck master	241	198	172	101
Assistant deck master	241	198	172	-
Ship's clerk	241	198	172	-
Stowage master	241	198	172	101
Stowage clerk	-	-	-	93
Stowage clerk per hatchway	692	567	469	-
Foreman	826	677	560	-
Seaman	1 424	1 168	966	-
Tallyman	692	567	469	-
Stevedore	6 610	5 420	4 481	450
Forklift operator	826	677	560	246
Packer	426	349	289	675
Gangway operator	826	677	560	246
Watchman	154	127	110	75
Hands on shore				
Dock master	-	-	-	101
Dockhand	3 305	2 710	2 240	450
Forklift operator	980	804	709	355
Tallyman	692	567	469	271
Crane operator	826	677	560	274
Storeroom keeper	-	-	-	159
Measurer	-	-	-	180
Total cost of hands	19 485	15 978	13 302	3 885
OTHER PORT COSTS (US dollars)				
Forklifts				
Number per shift	94	94	68	44
Cost per shift	100	100	100	100
Total cost of forklifts	9 400	9 400	6 800	4 400
Dockside cranes				
Number per shift	43	43	30	18
Cost per hour	40	40	40	40
Total cost of dockside cranes	11 180	11 180	7 800	5 400
Other expenses (per ship)	3 411	3 411	3 411	3 411

Example 1 (conclusion)	*1970*	*1975*	*1980*	*1986*
Berthage				
Fee (per meter of length per hour)	0.75	0.75	0.75	0.75
Hours of stay	174.5	174.5	126.5	48
Total cost of berthage	20 161	20 161	14 615	5 546
EMPORCHI transfer charges				
Fee per ton	1.98	1.98	1.98	1.98
Number of tons (at 18.5 kg/crate)	3 713	3 713	3 713	3 713
Total cost of transfer	7 351	7 351	7 351	7 351
Rental of vessels				
Cost per day	9 813	9 813	9 813	9 813
Total rental cost	71 349	71 349	51 723	19 626
Cost of diesel fuel consumed				
Daily (t)	1.5	1.5	1.5	1.5
Cost per ton	345	345	345	345
Total cost of diesel fuel	3 763	3 763	2 728	1 035
SUMMARY OF COSTS OF PORT OPERATIONS (US dollars per crate)				
Labour	0.10	0.08	0.07	0.02
Equipment	0.05	0.05	0.03	0.02
Materials	0.01	0.01	0.01	0.01
EMPORCHI transfer charges	0.04	0.04	0.04	0.04
Use of EMPORCHI cranes	0.06	0.06	0.04	0.03
Other	0.02	0.02	0.02	0.02
Subtotal	0.26	0.24	0.20	0.13
EMPORCHI berthage charges	0.10	0.10	0.07	0.03
Rental of vessels	0.36	0.36	0.26	0.10
Diesel fuel consumption	0.02	0.02	0.01	0.01
Subtotal	0.47	0.47	0.34	0.13
Total	0.73	0.72	0.54	0.26
Congestion	0.00	0.00	0.00	0.00
TOTAL COST (US dollars per crate)	0.73	0.72	0.54	0.26

Example 2: Copper bars

		1970	1975	1980	1986
Tons		2 800	2 800	2 800	2 800
Yield (tons per shift per hatchway)		325	455	520	750
Number of hatchways		2	2	2	2
Length of ship (meters)		145.27	145.27	145.27	145.27
HANDS (number)					
Hands on board					
Ship supervisor		1	1	1	-
Assistant ship supervisor		1	1	-	-
Co-ordinator		-	-	-	1
Deck master		1	1	1	1
Assistant deck master		1	1	1	-
Foreman		2	2	2	-
Delegate		2	2	2	-
Tallyman	per hatchway	1	1	1	-
Stevedore	per hatchway	9	9	9	4
Forklift operator	per hatchway	1	1	1	2
Packer	per hatchway	1	1	1	-
Gangway operator	per hatchway	-	-	-	1
Hands on shore					
Dock master		-	-	-	1
Dockhand	per hatchway	4	4	4	2
Forklift operator	per hatchway	1	1	1	1
Tallyman	per hatchway	-	-	-	1
Crane operator	per hatchway	1	1	1	1
Length of working days (hours)		6.5	6.5	6.5	7.5
Shifts per day		2	2	2	3
Number of shifts needed		5	4	3	2
Number of hands		10	8	6	4
Hours of stay		54.5	48	30.5	15
Hours of wait		-	-	-	-

Example 2 (continued)	*1970*	*1975*	*1980*	*1986*
NUMBER OF MEN PER SHIFT				
Hands on board				
Ship supervisor	5	4	3	-
Assistant ship supervisor	5	4	3	-
Co-ordinator	-	-	-	2
Deck master	5	4	3	2
Assistant deck master	5	4	3	-
Foreman	10	8	6	-
Delegate	10	8	6	-
Tallyman	10	8	6	-
Stevedore	90	72	54	16
Forklift operator	10	8	6	8
Packer	10	8	6	-
Gangway operator	-	-	-	4
Hands on shore				
Dock master	-	-	-	2
Dockhand	40	32	24	8
Forklift operator	10	8	6	4
Tallyman	-	-	-	4
Crane operator	10	8	6	4
Total number of men per shift	220	176	132	54
COST OF HANDS (US dollars)				
Hands on board				
Ship supervisor	84	55	49	-
Assistant ship supervisor	84	55	49	-
Co-ordinator	-	-	-	37
Deck master	84	55	49	34
Assistant deck master	84	55	49	-
Foreman	167	110	98	-
Delegate	167	110	98	-
Tallyman	167	110	98	-
Stevedore	2 979	1 954	1 737	200
Forklift operator	331	217	193	109
Packer	99	65	58	-
Gangway operator	-	-	-	55

Example 2 (continued)	*1970*	*1975*	*1980*	*1986*
Hands on shore				
Dock master	-	-	-	34
Deckhand	1 325	869	773	100
Forklift operator	331	217	193	-
Tallyman	-	-	-	60
Crane operator	331	217	193	61
Total cost of hands	6 233	4 089	3 634	689
OTHER PORT COSTS (US dollars)				
Forklifts				
Number per shift	20	16	12	12
Cost per shift	100	100	100	100
Total cost of forklifts	2 000	1 600	1 200	1 200
Dockside cranes				
Number per shift	-	-	-	-
Cost per hour	40	40	40	40
Total cost of dockside cranes	-	-	-	-
Other expenses (per vessel)	140	140	140	140
Berthage				
Fee (per metre of length per hour)	0.70	0.70	0.70	0.70
Hours of stay	54.5	48	30.5	15
Total cost of berthage	5 542	4 881	3 102	1 525
Rental of vessels				
Cost per day	4 000	4 000	4 000	4 000
Total cost of vessel rental	9 083	8 000	5 083	2 500
Cost of diesel fuel consumed				
Daily (t)	1.5	1.5	1.5	1.5
Cost per ton	345	345	345	345
Total cost of diesel fuel	1 175	1 035	658	323

Example 2 (conclusion)	*1970*	*1975*	*1980*	*1986*
SUMMARY OF COSTS OF PORT OPERATIONS (US dollars per ton)				
Labour	2.23	1.46	1.30	0.25
Equipment	0.71	0.57	0.43	0.43
Material	0.10	0.10	0.10	0.10
EMPORCHI transfer charges	1.98	1.98	1.98	1.98
EMPORCHI cranes	-	-	-	-
Other	0.05	0.05	0.05	0.05
Subtotal	5.07	4.16	3.86	2.80
EMPORCHI berthage charges	1.98	1.74	1.11	0.54
Rental of vessels	3.24	2.86	1.82	0.89
Diesel fuel consumed	0.42	0.37	0.23	0.12
Subtotal	5.64	4.97	3.16	1.55
Total	10.71	9.13	7.01	4.36
Congestion	-	-	-	-
TOTAL COST (US dollars per ton)	10.71	9.13	7.01	4.36

Example 3: Fish meal in sacks

		1970	*1975*	*1980*	*1986*
Tons		7 150.02	7 150.02	7 150.02	7 150.02
Yield (tons per shift per hatchway)		101	101	117	158
Number of hatchways		4	4	4	4
Length of vessel (meters)		182.2	182.2	182.2	182.2
HANDS (number)					
Hands on board					
Ship supervisor		1	1	1	-
Co-ordinator		-	-	-	1
Deck master		1	1	1	-
Assistant deck master		1	1	1	-
Foreman		1	1	1	-
Delegate		1	1	1	-
Seaman	per hatchway	4	4	4	-
Tallyman	per hatchway	1	1	1	-
Stevedore	per hatchway	10	10	10	8
Winchman	per hatchway	1	1	1	1
Gangway operator	per hatchway	-	-	-	1
Hands on shore					
Dock master		1	1	1	-
Dockhand	per hatchway	6	6	6	6
Packer	per hatchway	2	2	2	-
Tallyman	per hatchway	1	1	1	1
Length of working day (hours)		6.5	6.5	6.5	7.5
Shifts per day		2	2	2	3
Number of shifts needed		19	19	17	12
Number of hands		73	73	64	47
Hours of stay		222.5	222.5	198.5	96
Hours of wait		-	-	-	-

Example 3 (continued)	*1970*	*1975*	*1980*	*1986*
NUMBER OF MEN PER SHIFT				
Hands on board				
Ship supervisor	19	19	17	-
Co-ordinator	-	-	-	12
Deck master	19	19	17	-
Assistant deck master	19	19	17	-
Delegate	19	19	17	-
Foreman	19	19	17	-
Seaman	292	292	256	-
Tallyman	73	73	64	-
Stevedore	730	730	640	376
Winchman	73	73	64	47
Gangway operator	73	73	64	47
Hands on shore				
Dockmaster	19	19	17	-
Dockhand	438	438	384	282
Packer	154	154	128	-
Tallyman	73	73	64	47
Total number of men per shift	2 020	2 020	1 766	811
COST OF HANDS (US dollars)				
Hands on board				
Ship supervisor	165	135	143	-
Co-ordinator	-	-	-	219
Deck master	165	135	143	-
Assistant deck master	165	135	143	-
Foreman	165	135	143	-
Delegate	165	135	143	-
Tallyman	632	518	538	-
Stevedore	15 817	12 970	13 475	4 700
Winchman	1 581	1 297	1 347	642
Gangway operator	1 581	1 297	1 347	642

Example 3 (continued)	*1970*	*1975*	*1980*	*1986*
Hands on shore				
Dock master	165	135	143	-
Dockhand	9 491	7 782	8 085	3 525
Packer	1 069	877	863	-
Tallyman	632	518	538	707
Total cost of hands	33 820	27 732	28 781	10 434
OTHER PORT COSTS (US dollars)				
Forklifts				
Number per shift	-	-	-	-
Cost per shift	100	100	100	100
Total cost of forklifts	-	-	-	-
Dockside cranes				
Number per shift	-	-	-	-
Cost per hour	40	40	40	40
Total cost of dockside cranes	-	-	-	-
Other expenses (per vessel)	6 578	6 578	6 578	6 578
Berthage				
Fee (per meter of length per hour)	0.35	0.35	0.35	0.35
Hours of stay	222.5	222.5	198.5	96
Total cost of berthage	14 189	14 189	12 658	6 122
EMPORCHI transfer charges				
Fee per ton	1.98	1.98	1.98	1.98
Number of tons	7 150	7 150	7 150	7 150
Total cost of transfer	14 157	14 157	14 157	14 157
Rental of vessels				
Cost per day	4 000	4 000	4 000	4 000
Total cost of vessel rental	37 083	37 083	33 083	16 500
Cost of diesel fuel consumed				
Daily consumption (t)	1.5	1.5	1.5	1.5
Cost per ton	345	345	345	345
Total cost of diesel fuel	4 798	4 798	4 280	2 070

Example 3 (conclusion)	*1970*	*1975*	*1980*	*1986*
SUMMARY OF COSTS OF PORT OPERATIONS (US dollars per ton)				
Labour	4.73	3.88	4.03	1.46
Equipment	-	-	-	-
Materials	0.70	0.70	0.70	0.70
EMPORCHI transfer charges	1.98	1.98	1.98	1.98
EMPORCHI cranes	-	-	-	-
Other	0.92	0.92	0.92	0.92
Subtotal	8.33	7.48	7.63	5.06
EMPORCHI berthage charges	1.98	1.98	1.77	0.86
Rental of vessels	5.19	5.19	4.63	2.24
Diesel fuel consumed	0.67	0.67	0.60	0.29
Subtotal	7.84	7.84	7.00	3.38
Total	16.17	15.32	14.62	8.44
Congestion	-	-	-	-
TOTAL COST (US dollars per ton)	16.17	15.32	14.62	8.44

Example 4: Sawn wood

		1970	1975	1980	1986
Number of cubic meters		34 914.78	34 914.78	34 914.78	34 914.78
Yield (m^3/shift/hatchway)		81	81	178	365
Number of hatchways		6	6	6	6
Length of vessel (meters)		194	194	194	194
HANDS (number)					
Hands on board					
Deck master		1	1	1	1
Assistant deck master		1	1	1	1
Foreman		1	1	1	1
Assistant foreman		1	1	1	-
Delegate		2	2	2	-
Documentation clerk		-	-	-	1
Tallyman	per hatchway	1	1	1	-
Stevedore	per hatchway	11	11	11	4
Forklift operator	per hatchway	1	1	1	2
Winchman	per hatchway	2	2	2	1
Gangway operator	per hatchway	1	1	1	1
Hands on shore					
Dock master		1	1	1	1
Assistant dock master		1	1	1	1
Dockhand	per hatchway	6	6	6	3
Forklift operator	per hatchway	1	1	1	-
Tallyman	per hatchway	1	1	1	1
Forklift operator		-	-	-	2
Length of working day (hours)		5.5	5.5	5.5	7.5
Shifts per day		2	2	2	3
Number of shifts needed		76	76	35	17
Number of hands		432	432	200	98
Hours of stay		912	912	413.5	135
Hours of wait		-	-	-	-

Example 4 (continued)	*1970*	*1975*	*1980*	*1986*
NUMBER OF MEN PER SHIFT				
Hands on board				
Deck master	76	76	35	17
Assistant deck master	76	76	35	17
Foreman	76	76	35	17
Assistant foreman	76	76	35	-
Delegate	152	152	70	-
Documentation clerk	-	-	-	17
Tallyman	432	432	200	-
Stevedore	4 752	4 752	2 200	392
Forklift operator	432	432	200	196
Winchman	864	864	400	98
Gangway operator	432	432	200	98
Hands on shore				
Dock master	76	76	35	17
Assistant dock master	76	76	35	17
Stevedore	2 592	2 592	1 200	294
Forklift operator per hatchway	432	432	200	-
Tallyman	432	432	200	98
Forklift operator	-	-	-	34
Total number of men per shift	10 976	10 976	5 080	1 312
COST OF HANDS (US dollars)				
Hands on board				
Deck master	488	488	218	287
Assistant deck master	488	488	218	264
Foreman	488	488	218	310
Assistant foreman	488	488	218	-
Delegate	979	803	438	-
Documentation clerk	-	-	-	264
Tallyman	2 775	2 775	1 248	-
Stevedore	44 070	36 137	19 825	4 900
Forklift operator	4 006	3 285	1 802	2 674
Winchman	8 012	6 570	3 604	1 337
Gangway operator	4 007	3 286	1 803	1 337

Example 4 (continued)	*1970*	*1975*	*1980*	*1986*
Hands on shore				
Dock master	488	400	218	287
Assistant dock master	488	400	218	264
Stevedore	24 038	19 712	10 814	3 675
Forklift operator per hatchway	4 006	3 285	1 802	-
Tallyman	2 775	2 775	1 248	1 475
Forklift operator	-	-	-	464
Total cost of hands	97 576	80 029	43 895	17 537
OTHER PORT COSTS (US$)				
Forklifts				
Number per shift (on shore)	432	432	200	34
Cost per shift	130	130	130	130
Cost of forklifts on board	6 983	6 983	6 983	6 983
Total cost of forklifts	63 143	63 143	32 983	11 403
Dockside cranes				
Number per shift	-	-	-	-
Cost per hour	40	40	40	40
Total cost of dockside cranes	-	-	-	-
Other expenses (per vessel)	3 491	3 491	3 491	3 491
Berthage				
Fee (per meter of length per hour)	0.80	0.80	0.80	0.80
Hours of stay	912	912	413.5	135
Total cost of berthage	141 542	141 542	64 175	20 952
EMPORCHI transfer charges				
Fee per ton	1.20	1.20	1.20	1.20
Number of tons (at 678 kg/m^3)	23 672	23 672	23 672	23 672
Total cost of transfer	28 407	28 407	28 407	28 407
Rental of vessels				
Cost per day	5 000	5 000	5 000	5 000
Total cost of rental of vessels	190 000	190 000	86 146	28 125
Cost of diesel fuel consumed				
Daily consumption (t)	1.5	1.5	1.5	1.5
Cost per ton	345	345	345	345
Total cost of diesel fuel consumed	19 665	19 665	8 916	2 911

Example 4 (conclusion)	*1970*	*1975*	*1980*	*1986*
SUMMARY OF COST OF PORT OPERATIONS (US dollars per ton)				
Labour	2.80	2.29	1.26	0.50
Equipment	1.81	1.81	0.94	0.33
Materials	0.12	0.12	0.12	0.12
EMPORCHI transfer charges	0.81	0.81	0.81	0.81
EMPORCHI cranes	-	-	-	-
Other	0.10	0.10	0.10	0.10
Subtotal	5.64	5.13	3.24	1.86
EMPORCHI berthage charges	4.05	4.05	1.84	0.60
Rental of vessels	5.44	5.44	2.47	0.81
Diesel fuel consumed	0.56	0.56	0.26	0.08
Subtotal	10.06	10.06	4.56	1.49
Total	15.70	15.19	7.80	3.35
Congestion	-	-	-	-
TOTAL COST (US dollars per ton)	15.70	15.19	7.80	3.35

Example 5: Logs

		1970	1975	1980	1986
Number of cubic meters		34 914.78	34 914.78	34 914.78	34 914.78
Yield (m^3/shift/hatchway)		97	97	219	442
Number of hatchways		6	6	6	6
Length of vessel (m)		194	194	194	194
HANDS (number)					
Hands on board					
Deck master		1	1	1	1
Assistant deck master		1	1	1	1
Foreman		1	1	1	1
Assistant foreman		1	1	1	-
Delegate		2	2	2	-
Documentation clerk		-	-	-	1
Tallyman	per hatchway	1	1	1	-
Stevedore	per hatchway	12	12	12	5
Forklift operator	per hatchway	1	1	1	2
Winchman	per hatchway	2	2	2	1
Gangway operator	per hatchway	1	1	1	1
Hands on shore					
Dock master		1	1	1	1
Assistant dock master		1	1	1	1
Dockhand	per hatchway	6	6	6	3
Forklift operator	per hatchway	1	1	1	-
Tallyman	per hatchway	1	1	1	1
Forklift operator		-	-	-	2
Length of working day (hours)		5.5	5.5	5.5	7.5
Shifts per day		2	2	2	3
Number of shifts needed		64	64	29	14
Number of hands		362	362	163	81
Hours of stay		768	768	341.5	111
Waiting time		-	-	-	-

Example 5 (continued)	*1970*	*1975*	*1980*	*1986*
NUMBER OF MEN PER SHIFT				
Hands on board				
Deck master	64	64	29	14
Assistant deck master	64	64	29	14
Foreman	64	64	29	14
Assistant foreman	64	64	29	-
Delegate	128	128	58	-
Documentation clerk	-	-	-	14
Tallyman	362	362	163	-
Stevedore	4 344	4 344	1 956	405
Forklift operator	362	362	163	162
Winchman	724	724	326	81
Gangway operator	362	362	163	81
Hands on shore				
Dock master	64	64	29	14
Assistant dock master	64	64	29	14
Dockhand	2 172	2 172	978	243
Forklift operator per hatchway	362	362	163	-
Tallyman	362	362	163	81
Forklift operator	-	-	-	28
Total number of men per shift	9 562	9 562	4 307	1 165
COST OF HANDS (US dollars)				
Hands on board				
Deck master	411	337	181	236
Assistant deck master	411	337	181	217
Foreman	411	337	181	255
Assistant foreman	411	337	181	-
Delegate	825	676	363	-
Documentation clerk	-	-	-	217
Tallyman	2 325	1 907	1 017	-
Stevedore	40 286	33 034	17 626	5 063
Forklift operator	3 357	2 753	1 469	2 210
Winchman	6 714	5 505	2 937	1 105
Gangway operator	3 358	2 754	1 469	1 105

Example 5 (continued)	*1970*	*1975*	*1980*	*1986*
Hands on shore				
Dock master	411	337	181	236
Assistant dock master	411	337	181	217
Dockhand	20 143	16 518	8 813	3 038
Forklift operator per hatchway	3 357	2 753	1 469	0
Tallyman	2 325	1 907	1 017	1 219
Forklift operator	-	-	-	382
Total cost of hands	85 155	69 827	37 267	15 501
OTHER PORT COSTS (US dollars)				
Forklifts				
Number per shift (on shore)	-	-	-	-
Cost per shift	130	130	130	130
Cost of forklifts on board	-	-	-	-
Total cost of forklifts	-	-	-	-
Log cranes on shore				
Number per shift	362	362	163	81
Cost per hour	23.50	23.50	23.50	23.50
Total cost of dockside cranes	46 789	46 789	21 068	14 276
Other expenses (per vessel)	3 491	3 491	3 491	3 491
Berthage				
Fee (per meter of length per hour)	0.80	0.80	0.80	0.80
Hours of stay	768	768	341.5	111
Total cost of berthage	119 194	119 194	53 001	17 227
EMPORCHI transfer charges				
Fee per ton	1.20	1.20	1.20	1.20
Number of tons (at 678 kg/m^3)	23 672	23 672	23 672	23 672
Total cost of transfer	28 407	28 407	28 407	28 407
Rental of vessels				
Cost per day	5 000	5 000	5 000	5 000
Total cost of rental of vessels	160 000	160 000	71 146	23 125
Cost of diesel fuel consumed				
Daily consumption (t)	1.5	1.5	1.5	1.5
Cost per ton	345	345	345	345
Total cost of diesel fuel consumed	16 560	16 560	7 364	2 393

Example 5 (conclusion)	*1970*	*1975*	*1980*	*1986*
SUMMARY OF COST OF PORT OPERATIONS (US dollars per ton)				
Labour	2.44	2.00	1.07	0.44
Equipment	1.34	1.34	0.60	0.41
Materials	0.12	0.12	0.12	0.12
EMPORCHI transfer charges	0.81	0.81	0.81	0.81
EMPORCHI cranes	-	-	-	-
Other	0.10	0.10	0.10	0.10
Subtotal	4.81	4.37	2.70	1.89
EMPORCHI berthage charges	3.41	3.41	1.52	0.49
Rental of vessels	4.58	4.58	2.04	0.66
Diesel fuel consumed	0.47	0.47	0.21	0.07
Subtotal	8.47	8.47	3.77	1.22
Total	13.28	12.84	6.47	3.11
Congestion	-	-	-	-
TOTAL COST (US dollars per ton)	13.28	12.84	6.47	3.11

Annex II

DISTRIBUTION OF BENEFITS RESULTING FROM CHANGES MADE BETWEEN 1980 AND 1986

Example 1: Fruit

EMPORCHI fees in 1980		Determinant of fee	
Length of stay	US$ 0.03/GRT every 24 h[a]	Capacity of ship	7 936 GRT
Hands	US$13.50/h	Number of hands on shore	30
Mobilization	US$ 1.20/t	Amount moved	3 713 t
Storage	US$ 1.60/t	Amount stored	-

	EMPORCHI	Shipowners	Users	Total	
1980 sale/purchase					
EMPORCHI	-	3 887	4 455	8 342	
Shipping interests	-	-	75 276	75 276	
Users	-	-	-	-	
Total	-	3 887	79 731	83 618	
Resources					
Unionized labour	-	9 323	-	9 323	
Labour on shore	3 979	-	-	3 979	
Rental of machinery	3 800	3 000	-	6 800	
Rental of cranes	7 800	-	-	7 800	
Rental of vessels	-	51 723	-	51 723	
Diesel fuel	-	2 728	-	2 728	
Infrastructure	21 966	-	-	21 966	
Other	-	4 615	-	4 615	
Total resources 1980	37 545	71 389	-	108 934	0.54
Profit	-29 203	-	-	-29 203	-0.15
Total 1980	8 342	75 276	79 731	163 349	
			0.40		
1986 sale/purchase					
EMPORCHI	-	12 897	-	12 897	
Shipping interests	-	-	51 858	51 858	
Users	-	-	-	-	
Total	-	12 897	51 858	64 755	
Resources					
Unionized labour	-	2 095	-	2 095	
Labour on shore	-	1 790	-	1 790	
Rental of machinery	-	4 400	-	4 400	
Rental of cranes	-	5 400	-	5 400	
Rental of vessels	-	19 626	-	19 626	
Diesel fuel	-	1 035	-	1 035	
Infrastructure	12 897	-	-	12 897	
Other	-	4 615	-	4 615	
Total resources	12 897	38 962	-	51 858	0.26
Profit	-	-	-	-	-
Total 1986	12 897	51 858	51 858	116 613	
			0.26		
Difference 1986-1980					
EMPORCHI	-	9 009	-4 455	4 554	
Shipping interests	-	-	-23 418	-23 418	
Users	-	-	-	-	
Total	-	9 009	-27 873	-18 864	
Resources					
Unionized labour	-	-7 228	-	-7 228	
Labour on shore	-3 979	1 790	-	-2 189	
Rental of machinery	-3 800	1 400	-	-2 400	
Rental of cranes	-7 800	5 400	-	-2 400	
Rental of vessels	-	-32 097	-	-32 097	
Diesel fuel	-	-1 693	-	-1 693	
Infrastructure	-9 070	-	-	-9 070	
Other	-	-	-	-	
Difference (resources)	-24 649	-32 427	-	-57 076	-0.28
Profit	29 203	-	-	29 203	0.15
TOTAL DIFFERENCE	4 554	-23 418	-27 873	-46 736	
			-0.14		

[a]Gross register tons.

Example 2: Copper bars

EMPORCHI fees in 1980		Determinant of fee	
Length of stay	US$ 0.03/GRT every 24 h	Capacity of ship	5 576 GRT
Hands	US$13.50/h	Number of hands on shore	6
Mobilization	US$ 7.50/t	Amount moved	2 800 t
Storage	US$ 1.60/t	Amount stored	-

	EMPORCHI	Shipowners	Users	Total	
1980 sale/purchase					
EMPORCHI	-	739	21 000	21 739	
Shipping interests	-	-	9 975	9 975	
Users	-	-	-	-	
Total	-	739	30 975	31 715	
Resources					
Unionized labour	-	2 475	-	2 475	
Labour on shore	1 158	-	-	1 158	
Rental of machinery	600	600	-	1 200	
Rental of cranes	-	-	-	-	
Rental of vessels	-	5 083	-	5 083	
Diesel fuel	-	658	-	658	
Infrastructure	8 646	-	-	8 646	
Other	-	420	-	420	
Total resources 1980	10 404	9 236	-	19 640	7.01
Profit	11 335	-	-	11 335	4.05
Total 1980	21 739	9 975	30 975	62 690	
			-11.06		
1986 sale/purchase					
EMPORCHI	-	7 069	-	7 069	
Shipping interests	-	-	12 202	12 202	
Users	-	-	-	-	
Total	-	7 069	12 202	19 271	
Resources					
Unionized labour	-	435	-	435	
Labour on shore	-	255	-	255	
Rental of machinery	-	1 200	-	1 200	
Rental of cranes	-	-	-	-	
Rental of vessels	-	2 500	-	2 500	
Diesel fuel	-	323	-	323	
Infrastructure	7 069	-	-	7 069	
Other	-	420	-	420	
Total resources	7 069	5 133	-	12 202	4.36
Profit	-	-	-	-	-
Total 1986	7 069	12 202	12 202	31 474	
			4.36		
Difference 1986-1980					
EMPORCHI	-	6 330	-21 000	-14 670	
Shipping interests	-	-	2 227	2 227	
Users	-	-	-	-	
Total	-	6 330	-18 773	-12 443	
Resources					
Unionized labour	-	-2 041	-	-2 041	
Labour on shore	-1 158	255	-	-904	
Rental of machinery	-600	600	-	-	
Rental of cranes	-	-	-	-	
Rental of vessels	-	-2 583	-	-2 583	
Diesel fuel	-	-334	-	-334	
Infrastructure	-1 576	-	-	-1 576	
Other	-	-	-	-	
Difference (resources)	-3 335	-4 104	-	-7 438	-2.66
Profit	-11 335	-	-	-11 335	-4.05
TOTAL DIFFERENCE	-14 670	2 227	-18 773	-31 216	

Example 3: Fish meal in sacks

EMPORCHI fees in 1980		Determinant of fee	
Length of stay	US$ 0.03/GRT every 24 h	Capacity of ship	19 166 GRT
Hands	US$13.50/h	Number of hands on shore	64
Mobilization	US$ 2.10/t	Amount moved	7 150 t
Storage	US$ 1.60/t	Amount stored	-

	EMPORCHI	Shipowners	Users	Total	
1980 sale/purchase					
EMPORCHI	-	10 372	14 872	25 244	
Shipping interests	-	-	78 469	78 469	
Users	-	-	-	-	
Total	-	10 372	93 341	103 713	
Resources					
Unionized labour	-	19 151	-	19 151	
Labour on shore	9 630	-	-	9 630	
Rental of machinery	-	-	-	-	
Rental of cranes	-	-	-	-	
Rental of vessels	-	33 083	-	33 083	
Diesel fuel	-	4 280	-	4 280	
Infrastructure	26 815	-	-	26 815	
Other	-	11 583	-	11 583	
Total resources (1980)	36 446	68 098	-	104 543	14.62
Profit	-11 202	-	-	-11 202	-1.57
Total 1980	25 244	78 469	93 341 13.05	197 054	
1986 sale/purchase					
EMPORCHI	-	20 279	-	20 279	
Shipping interests	-	-	60 366	60 366	
Users	-	-	-	-	
Total	-	20 279	60 366	80 645	
Resources					
Unionized labour	-	6 202	-	6 202	
Labour on shore	-	4 232	-	4 232	
Rental of machinery	-	-	-	-	
Rental of cranes	-	-	-	-	
Rental of vessels	-	16 000	-	16 000	
Diesel fuel	-	2 070	-	2 070	
Infrastructure	20 279	-	-	20 279	
Other	-	11 583	-	11 583	
Total resources	20 279	40 087	-	60 366	8.44
Profit	-	-	-	-	-
Total 1986	20 279	60 366	60 366 8.44	141 011	
Difference 1986-1980					
EMPORCHI	-	9 907	-14 872	-4 965	
Shipping interests	-	-	-18 103	-18 103	
Users	-	-	-	-	
Total	-	9 907	-32 975	-23 068	
Resources					
Unionized labour	-	-12 949	-	-12 949	
Labour on shore	-9 630	4 232	-	-5 398	
Rental of machinery	-	-	-	-	
Rental of cranes	-	-	-	-	
Rental of vessels	-	-17 083	-	-17 083	
Diesel fuel	-	-2 210	-	-2 210	
Infrastructure	-6 536	-	-	-6 536	
Other	-	-	-	-	
Difference (resources)	-16 167	-28 011	-	-44 177	-6.18
Profit	11 202	-	-	11 202	1.57
TOTAL DIFFERENCE	-4 965	-18 103	-32 975	-56 043	

Example 4: Sawn wood

EMPORCHI Fees in 1980		Determinant of Fee	
Length of stay	US$ 0.03/GRT every 24 h	Capacity of ship	23 009 GRT
Hands	US$13.50/h	Number of hands on shore	200
Mobilization	US$ 2.10/t	Amount moved	23 672 t
Storage	US$ 1.60/t	Amount stored	-

	EMPORCHI	Shipowners	Users	Total	
1980 sale/purchase					
EMPORCHI	-	26 743	49 238	75 981	
Shipping interests	-	-	166 063	166 063	
Users	-	-	-	-	
Total	-	26 743	215 301	242 044	
Resources					
Unionized labour	-	29 594	-	29 594	
Labour on shore	14 301	-	-	14 301	
Rental of machinery	26 000	6 983	-	32 983	
Rental of cranes	-	-	-	-	-
Rental of vessels	-	86 146	-	86 146	
Diesel fuel	-	8 916	-	8 916	
Infrastructure	92 582	-	-	92 582	
Other	-	7 681	-	7 681	
Total resources 1980	132 883	139 320	-	272 203	7.80
Profit	-56 902	-	-	-56 902	-1.63
Total 1980	75 981	166 063	215 301 6.17	457 346	
1986 sale/purchase					
EMPORCHI	-	49 359	-	49 359	
Shipping interests	-	-	117 015	117 015	
Users	-	-	-	-	
Total	-	49 359	117 015	166 374	
Resources					
Unionized labour	-	11 372	-	11 372	
Labour on shore	-	6 164	-	6 164	
Rental of machinery	-	11 403	-	11 403	
Rental of cranes	-	-	-	-	
Rental of vessels	-	28 125	-	28 125	
Diesel fuel	-	2 911	-	2 911	
Infrastructure	49 359	-	-	49 359	
Other	-	7 681	-	7 681	
Total resources	49 359	67 657	-	117 015	3.35
Profit	-	-	-	-	-
Total 1986	49 359	117 015	117 015 3.35	283 389	
Difference 1986-1980					
EMPORCHI	-	22 616	-49 238	-26 622	
Shipping interests	-	-	-49 048	-49 048	
Users	-	-	-	-	
Total	-	22 616	-98 286	-75 670	
Resources					
Unionized labour	-	-18 222	-	-18 222	
Labour on shore	-14 301	6 164	-	-8 137	
Rental of machinery	-26 000	4 420	-	-21 580	
Rental of cranes	-	-	-	-	
Rental of vessels	-	-58 021	-	-58 021	
Diesel fuel	-	-6 005	-	-6 005	
Infrastructure	-43 223	-	-	-43 223	
Other	-	-	-	-	
Difference (resources)	-83 524	-71 664	-	-155 188	-4.44
Profit	56 902	-	-	56 902	1.63
TOTAL DIFFERENCE	-26 622	-49 048	-98 286	-173 956	

Example 5: Logs

EMPORCHI Fees in 1980		Determinant of Fee	
Length of stay	US$ 0.03/GRT every 24 h	Capacity of ship	23 009 GRT
Hands	US$13.50/h	Number of hands on shore	163
Mobilization	US$ 2.10/t	Amount moved	23 672 t
Storage	US$ 1.60/t	Amount stored	-

	EMPORCHI	Shipowners	Users	Total	
1980 sale/purchase					
EMPORCHI	-	21 925	49 238	71 163	
Shipping interests	-	-	154 789	154 789	
Users	-	-	-	-	
Total	-	21 925	204 027	225 952	
Resources					
Unionized labour	-	25 606	-	25 606	
Labour on shore	11 661	-	-	11 661	
Rental of machinery	-	21 068	-	21 068	
Rental of cranes	-	-	-	-	
Rental of vessels	-	71 146	-	71 146	
Diesel fuel	-	7 364	-	7 364	
Infrastructure	81 407	-	-	81 407	
Other	-	7 681	-	7 681	
Total resources 1980	93 069	132 864	-	225 933	6.47
Profit	-21 906	-	-	-21 906	-0.63
Total 1980	71 163	154 789	204 027	429 980	
			5.84		
1986 sale/purchase					
EMPORCHI	-	45 634	-	45 634	
Shipping interests	-	-	108 610	108 610	
Users	-	-	-	-	
Total	-	45 634	108 610	154 244	
Resources					
Unionized labour	-	10 409	-	10 409	
Labour on shore	-	5 092	-	5 092	
Rental of machinery	-	-	-	-	
Rental of cranes	-	14 276	-	14 276	
Rental of vessels	-	23 125	-	23 125	
Diesel fuel	-	2 393	-	2 393	
Infrastructure	45 634	-	-	45 634	
Other	-	7 681	-	7 681	
Total resources	45 634	62 977	-	108 61-	3.11
Profit	-	-	-	-	-
Total 1986	45 634	108 610	108 610	262 855	
			3.11		
Difference 1986-1980					
EMPORCHI	-	23 709	-49 238	-25 529	
Shipping interests	-	-	-46 179	-46 179	
Users	-	-	-	-	
Total	-	23 709	-95 417	-71 708	
Resources					
Unionized labour	-	-15 197	-	-15 197	
Labour on shore	-11 661	5 092	-	-6 569	
Rental of machinery	-	-21 068	-	-21 068	
Rental of cranes	-	14 276	-	14 276	
Rental of vessels	-	-48 021	-	-48 021	
Diesel fuel	-	-4 970	-	-4 970	
Infrastructure	-35 774	-	-	-35 774	
Other	-	-	-	-	
Difference resources	-47 435	-69 888	-	-117 323	-3.36
Profit	21 906	-	-	21 906	0.63
TOTAL DIFFERENCE	-25 529	-46 179	-95 417	-167 125	
			-2.73		

Example 6: General import cargo

EMPORCHI fees in 1980		Determinant of fee	
Length of stay	US$ 0.03/GRT every 24 h	Capacity of ship	5 000 GRT
Hands	US$13.50/h	Number of hands on shore	64
Mobilization	US$ 5.20/t	Amount moved	7 150 t
Storage	US$ 1.60/t	Amount stored	5 005

	EMPORCHI	Shipowners	Users	Total	
1980 sale/purchase					
EMPORCHI	-	6 857	45 188	52 045	
Shipping interests	-	-	78 154	78 154	
Users	-	-	-	-	
Total	-	6 857	123 343	130 199	
Resources					
Unionized labour	-	19 151	-	19 151	
Labour on shore	9 630	-	-	9 630	
Rental of machinery	3 200	3 200	-	6 400	
Rental of cranes	16 640	-	-	16 640	
Rental of vessels	-	33 083	-	33 083	
Diesel fuel	-	4 280	-	4 280	
Infrastructure	26 815	-	-	26 815	
Other	-	11 583	-	11 583	
Total resources 1980	56 286	71 298	-	127 583	17.84
Profit	-4 241	-	-	-4 241	-0.59
Total 1980	52 045	78 154	123 343	253 542	
			17.25		
1986 sale/purchase					
EMPORCHI	-	20 279	18 769	39 048	
Shipping interests	-	-	79 166	79 166	
Users	-	-	-	-	
Total	-	20 279	97 935	118 214	
Resources					
Unionized labour	-	6 202	-	6 202	
Labour on shore	-	4 232	-	4 232	
Rental of machinery	-	4 700	-	4 700	
Rental of cranes	-	14 100	-	14 100	
Rental of vessels	-	16 000	-	16 000	
Diesel fuel	-	2 070	-	2 070	
Infrastructure	20 279	-	-	20 279	
Other	-	11 583	-	11 583	
Total resources	20 279	58 887	-	79 166	11.07
Profit	18 769	-	-	18 769	2.63
Total 1986	39 048	79 166	97 935	216 149	
			13.70		
Difference 1986-1980					
EMPORCHI	-	13 422	-26 419	-12 997	
Shipping interests	-	-	1 012	1 012	
Users	-	-	-	-	
Total	-	13 422	-25 407	-11 985	
Resources					
Unionized labour	-	-12 949	-	-12 949	
Labour on shore	-9 630	4 232	-	-5 398	
Rental of machinery	-3 200	1 500	-	-1 700	
Rental of cranes	-16 640	14 100	-	-2 540	
Rental of vessels	-	-17 083	-	-17 083	
Diesel fuel	-	-2 210	-	-2 210	
Infrastructure	-6 536	-	-	-6 536	
Other	-	-	-	-	
Difference (resources)	-36 007	-12 411	-	-48 417	-6.77
Profit	23 010	-	-	23 010	3.22
TOTAL DIFFERENCE	-12 997	1 012	-25 407	-37 393	